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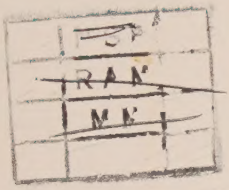

Annual Report of the AGRICULTURE DEPARTMENT

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For the year ended

31st December, 1965

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of the

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FOREWORD BY THE HONOURABLE J. B. T. KAKONGE, M.P., MINISTER OF AGRICULTURE AND FORESTRY

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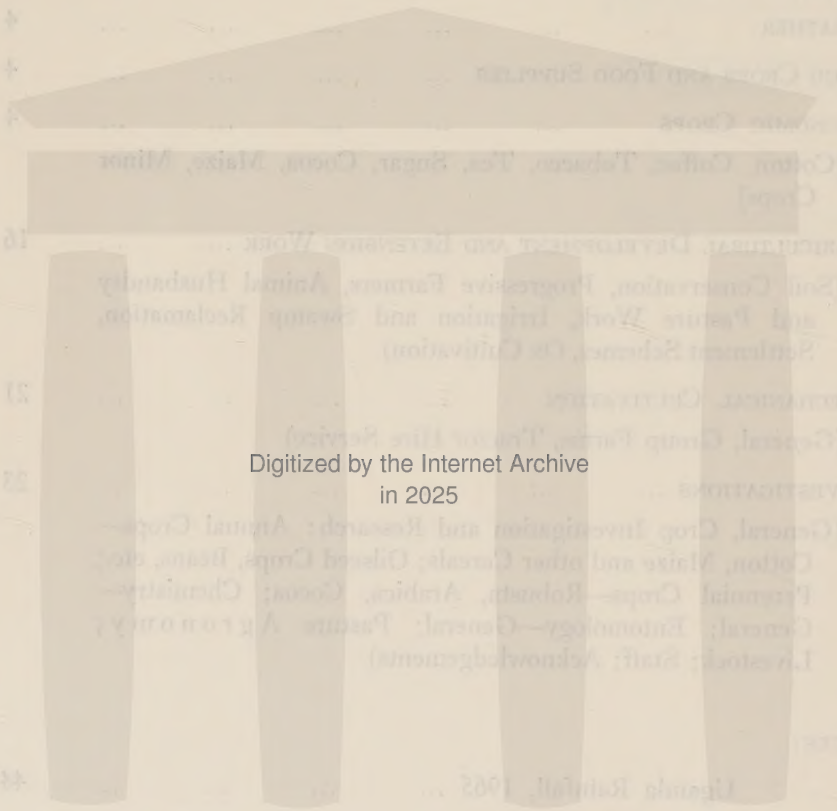

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FOREWORD

In 1965 the First Five-Year Development Plan came to an end and preparation for the Second Five-Year Development Plan was launched.

Projects under the First Five-year Development Plan introduced some innovations, the most outstanding of which was the expansion of mechanical cultivation. The period also witnessed several new agricultural developments and these included a positive programme of rural credit, farmers rural training through District Farm Institutes, subsidies on equipment and cotton D.D.T. insecticide sprays, expansion of the group farming scheme and of tea and sugar production. These innovations have been useful in raising agricultural productivity so much so that output in the agricultural sector has been increasing at a higher rate than the rate of increase of population growth.

The experience gained during the First Five-Year Plan was utilised in planning the Second Five-Year Development Plan, which was published in 1966. Because agriculture still holds a predominant position in the country's economic development, it was hoped the new Plan would accord agriculture its rightful place in the strategies for development.

Agricultural development throughout the world is a difficult task and this is more so in Uganda because our farming community forms a very large proportion of the country's population. It is gratifying that the agricultural staff, despite their fewness, endeavoured to implement Government policy in respect of rural development creditably. Development projects have increased almost threefold without any corresponding increase in the number of staff to run them. For this reason I feel greatly indebted to the Commissioner for Agriculture and his staff who have done their best to implement Government policy. Success, however, should not lead to a relaxation of our effort. Uganda is a young developing country, and it is with this in mind that I want to put an earnest plea to the Department's professional staff to continue to exert their effort in implementing Government policy in order to revolutionise agricultural production and development.

J. B. T. KAKONGE,
Minister of Agriculture and Forestry.

THE REPUBLIC OF UGANDA

DEPARTMENT OF AGRICULTURE

Annual Report

For the Year ended 31st December, 1965.

I. INTRODUCTION

(a) Policy

THE DEPARTMENT of Agriculture continued to pursue the policy which has been in force for the previous years. The strategy consisted of the following:—

(i) to conserve soil, water and other natural resources;

(ii) to enhance the natural fertility of the land by the introduction of improved livestock, and their integration with arable crops, and to encourage private ownership of land in order to create the incentive to look after the land properly;

(iii) to increase production and improve the quality of cash crops to enable the people to enjoy a better standard of living, and to increase the revenue of the country;

(iv) to ensure self sufficiency of food supplies of the people of the country and to encourage the Uganda farmer to grow such food which can be grown locally.

2. 1965 was the year when the First Five-Year Development Plan was coming to an end, and it was necessary to draw a plan to succeed the first one. Many officers of the Department of Agriculture actively participated in the two main Working Parties (Nos. 1 and 3) set up by the Government to examine strategies for agricultural development in Uganda. The effort of this staff resulted in the reports of the Working Parties which would be incorporated in the National Development Plan.

3. As a result of the suspension of the Progressive Farmers Loan Scheme, no loans were issued to the farmers, but the field staff of the Department continued advising farmers who had borrowed money under the Scheme. However, the subsidy given under the Agricultural Equipment Scheme was issued to a number of farmers, and even without the assistance of the loan many of them took advantage of the Subsidy Scheme in purchasing equipment.

4. The year witnessed a further expansion of the co-operative group farming scheme. This has underlined the popularity of the scheme which, during the year under review, became clear that the planned increase in the number of group farms and tractors could not meet the demand. Numerous applications for the establishment of group farms were received, but to the dismay of the applicants, many requests had to be turned down. It is hoped that in the forthcoming National Development Plan strong consideration would be given to meet this demand.

(b) General Review

5. The year 1965 was characterised, in most parts of Uganda, by a prolonged drought in the first quarter of the year, and unprecedented heavy rain towards the end of the year. This unfavourable weather condition led to food shortages in many parts of Uganda, and in some places, especially in Karamoja and other parts of the Eastern Region, it was necessary to organise food supplies to the famine-stricken people. Crop production was also badly affected, and this might account for the failure to achieve the half million bales in cotton production because the farmers, being conscious of food shortage, paid relatively more attention to food crop production rather than cotton.

6. In 1964, staff discontinuity was experienced as a result of an exodus of expatriate staff. In 1965 the situation was greatly improved as more Ugandan officers who replaced the expatriates settled in their jobs. Courses on extension methods for both adult and young farmers were organised and affected both junior and senior staff. This had a marked impact on the strength of the Young Farmers of Uganda whose total number of clubs and members continued to increase rapidly, especially in Buganda. Members established various animal and crop projects which served as nuclei for demonstrating improved farming techniques. In all activities for the extension services, the Information and Visual Aids Centre Cinema Vans made an outstanding debut. The vans toured various areas of the country showing films on improved standards of farming as well as some recreation films. They therefore, provided not only knowledge of improved agriculture, but also recreation for the rural populace.

7. The total cotton lint production from the 1964/65 crop amounted to 437,801 bales. This excluded 130 bales from research stations. The acreage planted was 2,138,137 acres; this compared with 2,014,242 in 1963/64. The 1964/65 crop brought an estimated amount of £15,077,456 which went to growers.

8. The 1965/66 cotton crop acreage was 2,262,464 acres and the production forecast was 445,000 bales.

9. The total overseas export value of the total coffee crop amounted to £30,421,334. There was a drop in value when compared to the 1964 value which was £35,378,156. But the total quantity of coffee exported in 1965 amounted to 155,295 tons as compared to 137,455 tons in 1964.

10. 1965 was the year when Master Growers in West Nile became responsible for their nurseries, and they also formed Wood Fuel Societies. One thousand

five hundred and seven (1,507) Master Growers' barns produced a total of 1,993,135 lb. of flue-cured tobacco which earned the farmers in the District a total of £94,557.

11. In all, 335 tons of cured tobacco was exported overseas in 1965 valued at £67,409. Exports of cigarettes as well as cigars and cheroots, etc., to neighbouring territories amounted to 357,939 lb. valued at £251,837, and export of unmanufactured tobacco was 5,973,305 lb. worth £1,027,038.

12. The dry spell affected sugar production in 1965 and a total of 489 tons were exported overseas, worth £30,388. The quantities and value of each type of sugar sold to neighbouring countries are shown below:—

Sugar	... ...	18,613 tons valued at £857,184.
Jaggery	... ...	3 tons valued at £169.
Molasses	... ...	85 tons valued at £327.

13. It was estimated that the tea planted by small-holders was 4,008 acres as compared with 2,668 in 1964. Despite bad weather conditions the quantity of made tea sold overseas was 6,667 tons, worth £2,388,418 as compared to 5,992 tons, worth £2,211,596 in 1964. Export of tea to neighbouring countries amounted to 122 tons valued at £33,230.

14. In pursuit of Government Policy, the co-operative movement in Uganda continued to play an active role in the cotton and coffee industries. There were 40 Co-operative Unions' ginneries which ginned 80 per cent of their own cotton as against 70 per cent in 1964, and in the year under review, the co-operative quota was 60 per cent of the national total as compared to 55 per cent in 1964.

15. One of the main features of 1965 was the achievement of the First Five-Year Development Plan; in particular the expansion of mechanical cultivation through group farms and tractor hire service. There was a high demand for the establishment of group farms.

16. Various courses were given at District Farm Institutes, and it was a year during which women began to attend courses in greater numbers than before. It was, therefore, an encouragement for the field staff to see that the entire farming community, and not one sex, was beginning to receive courses of instruction in agriculture. As a result, over 10,000 farmers attended courses at D.F.I's.

17. The year 1965 also saw the launching of the Young Farmers of Uganda Programme on a national scale. There was a remarkable increase in the number of clubs and membership, and there was also a corresponding increase in the number of projects, very varied in nature, being run by members. A Ugandan National Organiser was appointed and he has been understudying a U.S.A.I.D. expert.

(c) Liaison with Local Governments and Other Departments

18. There was, on the whole, good relations and co-operation between officials of District/Kingdom Governments and the Agricultural Department, and this has yielded a remarkable success against unfavourable weather conditions. Co-operation with other Central Government Departments was extremely good and frequent joint safaris and campaigns were organised.

II. WEATHER

19. The year 1965 was characterised by prolonged dry periods from about late April to August in most parts of the country. In most areas the early rains which broke in March continued for a short period, after which they were followed by dry spells which persisted until September when the second rains began. The total amount of rain received during the year was below the 10-year average. In the Northern Region, January and February were dry and hot as usual. Except for Acholi District, which received heavy showers in March, Lango and West Nile received light showers while Madi remained dry. The rainy period was short, after which it was followed by dry conditions characterised by localised ineffective showers. However, in July and August, fairly well distributed rainfall was received in most areas of the Northern Region. October and November were abnormally wet in all areas of this Region, but this wet condition wore off in December. A similar pattern of rainfall occurred in the Eastern and Western Regions.

20. The early rains started in February in the Eastern Region as usual, but this was followed by fairly severe dry conditions which continued until August when effective second rains began. The favourable rainy conditions continued until November when the usual dry conditions broke out. In the Western Region the early rains broke out in March, but it was soon followed by dry conditions, a spell which was broken by patchy, ineffective rains. The second rains began in August and was normal in amount.

III. FOOD CROPS AND FOOD SUPPLIES

21. The unfavourable weather conditions during the year caused food shortages in most areas of the country. The shortages were acute in the Eastern Region, especially in Karamoja and East Teso and some parts of Bugisu and Bukedi. In these areas it was necessary for famine measures to be taken, whereas in other Regions, especialy in Buganda, which were not so badly affected, food distribution had to be organised. Restriction on export of food was imposed in all districts of the Northern Region. A vigorous campaign for increased food crop planting was carried out in all Regions.

22. In most areas the drought affected early planted food crops, and this led to increased food crop planting in the second rains. The total acreage planted to food crops was greater than the previous year's acreage, except in the Western Region.

IV. ECONOMIC CROPS

(a) Cotton

23. As the crop years overlap, this report deals with the marketing of the 1964/65 cotton crop and the production of the 1965/66 cotton.

(i) 1964/65 Season

24. The year 1964 was one when there was a concerted effort of the Departments of the Central Government, District/Kingdom Administrations and the Co-operative Unions to encourage increased cotton production. Emphasis

was placed on the three essential "s's", *i.e.* early "sowing", proper "spacing" and "spraying" with the D.D.T. insecticide. This effort attained successful results since a total of 2,138,137 acres were planted throughout the country which yielded a record crop of 437,801 bales of lint.

25. Marketing the crops began in November, and the prices paid to growers were 57 cents per lb. of seed cotton for B.P.52 "safi", and 56 cents for S.47 "safi". The respective prices for "fifi" were 29 and 28 cents. The return to growers in terms of cash was estimated to be £15,077,456.

(ii) 1965/66 Season

26. In 1965 the cotton production drive was greatly assisted by the cinema vans of the Information and Visual Aids Centre of this Department which toured all cotton growing areas in the country. Earlier in the year the increased cotton production campaign was jointly launched by the field staff of the Department who were assisted most appropriately by officials of the District/Kingdom Administrations and Co-operative Unions. Emphasis was placed on prescribed husbandry practices; in particular, early land preparation to enable timely planting, proper spacing and spraying with the D.D.T. insecticide. The response to the appeal was good, but the unfavourable weather conditions hindered increased planting and early planting. In Buganda and Western Regions the late planted cotton received ample and well distributed rainfall in the second rain-season. In the Northern and Eastern Regions the dry conditions reduced the June–July cotton acreage and retarded the growth of the earlier plantings. In most areas some farmers were discouraged from spraying because of the dry spell, and the pest incidence was slightly higher than usual in some places. In all, a total of 2,262,464 acres were planted and these have so far yielded an all-time record of 444,932 bales of lint.

27. Marketing began in November in Eastern and Northern Regions, and December in Buganda and the Western Regions. The prices paid to growers were 60 cents for B.P.52 "safi" and 59 cents for S.47 "safi". Prices for the "fifi" were 25 cents in all zones.

Table A—Cotton Production 1955/56 to 1965/66

Season	Estimated acreage	Bales of lint (400 lb.)	Average yield of seed cotton/acre	Average price to growers per 100 lb. of seed cotton
			lb.	*Shs. cts.*
1955/56 ..	1,585,500	363,449	305	52 00
1956/57 ..	1,568,539	372,185	313	53 34
1957/58 ..	1,617,013	350,693	288	54 90
1958/59 ..	2,014,020	400,682	263	44 20
1959/60 ..	1,564,744	360,260	300	44 81
1960/61 ..	1,516,155	371,022	318	52 23
1961/62 ..	2,072,121	181,137	113	52 06
1962/63 ..	1,803,459	358,288	257	53 56
1963/64 ..	2,014,242	379,286	245	56 50
1964/65 ..	2,138,137	437,931	261	54 00
1965/66 ..	2,262,464	444,932	—	—

28. Since the introduction of Cotton (Amendment) Act, 1962, which empowered the Minister of Agriculture and Co-operatives to allocate the Co-operative ginneries in proportion to ginning capacity, there has been increased purchases of seed cotton allocated to Co-operative ginneries as illustrated below:—

Table B—Cotton Ginning Allocation

Zone	Percentage			
	1962/63	1963/64	1964/65	1965/66
Mengo	15	25	28	40
Mubende ..	15	35	46	60
Busoga	35	50	55	60
Mbale	41	55	60	70
Bunyoro	50	78	85	100
Lango	20	60	75	90
East Acholi ..	—	60	100	100
West Acholi ..	—	65	70	80
Teso	—	35	60	65
Masaka	—	65	70	100
West Nile and Madi	—	100	100	100

29. The remaining crop in each zone was placed on a normal pool basis between the private ginneries.

(iii) Multiplication of New Strains of Cotton

30. This programme continued as was originally planned. The "Albar" type of cotton was planted in Segregated Area II thus continuing a process which would enable the farmers to begin growing the new strain. SATU will ultimately replace S.47 which it outyields by about 20 per cent. In the replacement programme great care to avoid mixing the new and old strains will be necessary, and plans are actively underway to ensure an orderly replacement.

31. Cotton seed dressing was carried out in the usual specified ginneries and the free issue of cotton seed was also carried out.

(iv) Cotton Spraying

32. The campaign for proper spraying was intensified during the year especially when the cinema vans came into operation. Despite the fact that the unfavourable weather conditions discouraged a few farmers from spraying, cotton spraying increased in most zones. The following tins of the D.D.T. insecticide were sold:—

Table C—D.D.T. Insecticide Purchases 1965

Region	Number of tins
Buganda ..	1,170
Western Region	269
Eastern Region ..	27,775
Northern Region	20,776
TOTAL ..	49,990

(v) Amalgamation of Cotton Zones

33. Following the 1964 referendum in Buyaga and Bugangazzi (formerly in Mubende District) in which people voted to return to Bunyoro Kingdom, the Mubende zone was split in 1965 so that the two counties became part of Bunyoro zone, while Buwekula, a third county of Mubende District, amalgamated with Singo.

(b) Coffee

(i) Bugisu Arabica 1964/65 Season

34. Owing to the normal biannual fluctuation in yield, flowering during the season was moderate. Emphasis on improvement of quality was intensified by using posters and pamphlets. Although a certain amount of quality improvement was achieved, the yield was about half the 1963/64. This was attributable to the biannual fluctuation which, in the 1964/65 season, was aggravated by the incidence of die-back, lack of manuring and relatively low standards of cultural practices caused by the farmers pre-occupation with "Circumcision" ceremonies.

35. The total value of the crop to growers was £853,866. By the end of the year bonus had not yet been paid, but would be paid the following year. The calculated rate was as follows:—

P. Grade	...	...	@ 15	cents per lb.
No. I „	...	...	@ 11	„ „ „
No. II „	...	...	@ 05	„ „ „

36. All the coffee was milled in Mbale and auctioned in Nairobi where it realised an average price of £344·3 per ton f.o.r. Nairobi.

(ii) 1965/66 Season

37. The "Circumcision" ceremonies which affected cultural practices in the previous season were not experienced in 1965. Vigorous campaigns on improved husbandry practices, spraying against antestia and lacebug, were carried out jointly by the Agricultural Department staff and officials from the Bugisu Co-operative Union and District Administration.

38. Total purchases of parchment from August to the end of December of the current crop amounted to 7,319 tons compared with 3,347 tons in the 1964/65 season. Total sales of clean coffee from this crop by the end of December amounted to 2,573 tons at an overall average price of £352·03 per ton f.o.r. Nairobi. This compares favourably with the figures for the same period of the previous year of 1,929 tons at an average price of £344·3 per ton. Despite these favourable sales, the quantity of coffee processed by the mill exceeded storage capacity. The attempt to obtain direct sales to overseas markets was not so successful, and this, together with an increase in the volume of the crop offered by growers for sale, led to overstocking, and it was even necessary to close the mill temporarily. With this experience, steps would be taken the following year to avoid the occurrence of overstocking.

39. The pattern of Bugisu Arabica Coffee production is illustrated in table D.

Table D—Bugisu Arabica Coffee

Season	Production of Bugisu Parchment	Estimated value to growers
	Tons	£
1955/56 ..	4,098	1,349,756
1956/57 ..	5,175	1,420,353
1957/58 ..	4,805	1,198,602
1958/59 ..	4,912	764,072
1959/60 ..	5,791	1,013,727
1960/61 ..	5,149	927,627
1961/62 ..	9,704	1,935,827
1962/63 ..	3,430*	585,100
1963/64 ..	9,527	1,855,294
1964/65 ..	4,257	853,866

* Does not include purchases by the Bugisu Marketing Association.

(iii) Bugisu Coffee Improvement Scheme

40. During the year three more pulperies were built to bring the total number of Central Pulperies to seven, all of which functioned well during the year although not to capacity. The following figures illustrate the increase in utilisation of the pulperies.

Season	*Amount of Coffee Processed*
	tons.
1963/64	36
1964/65	58
1965/66	89·6 (to end of the year).

41. It is planned to increase the number of pulperies to a total of twenty-eight over the years.

42. Team spraying against antestia and lace bug using motorised knapsack sprayers continued during the year. A full-time Assistant Agricultural Officer-in-Charge of the Coffee Spraying Scheme commenced his duties during the year, resulting in better co-ordination and efficient use of equipment. There was an increase in the number of acres sprayed during the year as illustrated by the following table:—

Table E—Bugisu Arabica Coffee Team Spraying

Season	Acres sprayed
1959 ..	1,436
1960 ..	11,400
1961 ..	9,356
1962 ..	7,700
1963 ..	5,057
1964 ..	8,950
1965 ..	9,569

The average cost per acre incurred by the Bugisu Coffee Trustees Fund was Shs. 33·17.

43. Trials to test the comparative efficiency of Fenitrothion and Malathion were finalised during the year. Previous indications were that a 50 per cent miscible Fenitrothion liquid applied at $\frac{3}{4}$ pint per acre gave as good a control on antestia as did 50 per cent malathion liquid at 2 pints per acre. The superiority of Fenitrothion was confirmed in 1965 and will be used in the 1966 spraying scheme.

44. In May 1965, some 458,000 coffee seedlings, mainly from the Busulani Central Nursery, were distributed to farmers. It is expected that an equivalent number of old coffee stumps were uprooted. This should total 673 acres of coffee replaced.

(iv) Coffee other than Bugisu Arabica

45. During the year under review the production of Arabica coffee in Buganda, Western and Northern Regions amounted to 4,985 tons valued at £1,076,104. Total coffee production for the same areas was 123,575 tons valued at £13,482,256. Prices obtained during the year were as shown in the following tables:—

Table F1—Robusta Prices—Cents Per Pound

Dates		Dry Cherry	Rough	Parchment
From	*To*	*Cents*	*Cents*	*Cents*
25–1–1965	10– 4–1965	50	95	84
3–5–1965	12– 7–1965	40	76	70
19–7–1965	31–12–1965	40	83	75

Table F2—Arabica Prices—Shs./Cents Per Pound

Year	Dry Cherry	Rough Hulled	Parchment
	cents	*Shs. cts.*	*Shs. cts.*
1962 ..	74	1 64	1 70
1963 ..	74	1 64	1 70
1964 ..	74	1 64	1 70
1965 ..	74	1 64	1 70

The departmental field staff campaigned in all coffee areas encouraging the adoption of improved cultural practices. Owing to the dry weather conditions which prevailed abnormally too long, a number of farmers were discouraged to heed husbandry advice, particularly in Buganda. The poor quality of crop was attributed to these unfavourable weather conditions.

46. In the Western Region, field staff paid particular attention to team spraying, a scheme which was relatively new in the area. This was coupled with encouragement to improve standards of husbandry to make spraying an economic proposition. The standard of husbandry, however, did not improve appreciably which means that the economic benefit of team spraying was not realised. Further intensive campaigns to improve the standard of husbandry are planned for the following year.

47. In West Nile, the main feature with coffee production was an increase of the purchase of subsidised items, and the use of the Co-operative Society pulperies.

48. Sequential sampling for antestia was carried out at the beginning of 1954, but with little success. Sampling done in July 1964 revealed a very high incidence of antenstia, and the yields and quality were very much affected by this pest attack. In 1965 the pest attack continued and the quality of the crops was lower than the 1964 coffee.

(c) Tobacco

(*i*) *Flue-cured*

49. Production of this type of tobacco continued to be confined to West Nile, Acholi and Lango districts. Production was carried out by:—

(*a*) master-growers who grew and cured their own crops under contract with British American Tobacco Company;

(*b*) co-operative societies who grew and cured tobacco, and also carried out the buying and grading of cured leaf;

(*c*) green-leaf growers who grew and sold to curers;

(*d*) independent growers who grew and made their arrangements to sell their tobacco.

50. In West Nile, the entire crop was produced by master-growers who were also responsible for the nursery work under the supervision of the B.A.T.(U) staff. This was the first time the master-growers assumed this responsibility. Farmers formed 14 Primary Societies based on B.A.T.(U) buying centres. Also 14 Co-operative Wood Fuel Societies were formed, and the Eucalyptus plantations were interplanted with cotton and food crops. A total of 1,700 acres have already been planted with the assistance of B.A.T.(U).

51. During the year under review 1,507 master-growers' barns out of 1,509 produced 1,916,190 lb. of cured leaf. Only one tobacco crop was planted during the year instead of the usual two crops. The average yield per acre increased from 936 lb. to 1,136 lb. per acre of cured leaf despite the unfavourable weather conditions.

52. In Acholi, the crop was grown by members of Co-operative Societies and three independent growers. By the end of April planting was completed. Eighty new barns were constructed during the year. Some leaf curl was observed on earlier planted crops.

53. Later in the year a Tobacco Marketing Co-operative Union was formed consisting of four Primary Co-operative Societies with 608 members. Buying by B.A.T. commenced in the second week of July at the main Centre of the Acholi Tobacco Marketing Union at fortnightly intervals. The leaf offered for sale was fair to medium quality. There was a certain amount of green due to untimely harvesting.

54. A total of 351,519 lb. of cured leaf was bought which brought a total of £42,130 to growers. The whole crop was bought at an average price of Shs. 2/50 per lb. of cured leaf.

55. In Lango District, Ngai Tobacco Growers planted 9 acres of tobacco which produced 3,813 lb. of cured leaf valued at £483. The price paid to growers was Shs. 2.50 per lb. of cured leaf.

56. In Kigezi, two crops were produced during the year. The unfavourable weather conditions, however, reduced the yield considerably. A total of 27,541 lb. of cured leaf was realised against a target of 15,000 lb. of cured leaf. In this district, the farmers are green-leaf tobacco growers.

(*ii*) *Fire-cured Tobacco.*

57. This tobacco is grown in West Nile, Bunyoro and Mubende. In West Nile the entire supervision of growing the crop was done by the Agricultural Department staff who also assisted farmers in grading at the time of marketing. Seedbed preparation started early in December 1964, and by the end of January 1965, sowing was nearly completed; many growers planted their seedings dry.

58. The dry spell had an adverse effect on the growth of the crop and the late plantings suffered from leaf curl. Harvesting started in June, but curing was generally poor due to lack of sufficient smoking. The table below illustrates production figures.

Table G—Fire-Cured Tobacco Production—West Nile

Grade	Poundage	Price	Value to growers
		Shs. cts.	*Shs. cts.*
I ..	452,273	1 50	678,409 50
II ..	696,635	1 10	766,298 50
III ..	365,978	0 70	256,184 60
IV ..	467,642	0 40	187,056 80
Scrap ..	10,607	0 30	3,183 10
TOTAL ..	1,993,135		1,891,131 50

59. The target for Bunyoro plus the whole of Mubende area was set at 4,500,000 lb. of cured leaf, an increase of a 1,000,000 lb. over the 1964 target of 3,500,000 lb. Owing to the dry weather conditions this target was not achieved and only 4,056,566 lb., worth £172,972, were obtained. The figure shows that production had increased significantly. However, the quality was relatively poor.

60. As in previous years, the Bunyoro Co-operative Union acted as agent on behalf of B.A.T.(U) and Trans-continental Leaf Tobacco Company.

61. Sowing in beds began in the third week of January and was completed in March. Planting started in April, but because of the unusual erratic nature of rainfall, planting slowed down and continued until June. The unfavourable weather conditions and the low standard of husbandry led to a poor quality crop. Grading was difficult and was not done satisfactorily.

62. The breakdown by grades was as follows:—

Table H—Bunyoro

Grade	Price lb.	Poundage	Value to growers
	Shs. cts.		*Shs. cts.*
I ..	1 50	166,776	250,164 00
II ..	1 10	2,097,5775	2,307,334 70
III ..	0 70	464,78	325,349 50
IV ..	0 40	1,270,334	508,133 60
V ..	0 30	1,980	594 00
TOTAL ..	..	4,001,452	3,391,575 80

63. As a result of the referendum of 1964 which resulted in Bugangazzi and Buyaga being returned to Bunyoro, the number of registered growers in Buwekula, the only remaining county in Mubende was correspondingly reduced from 1,465 growers in 1964 to 611 in 1965. The dry weather conditions caused reduction in the crop yield from 731 lb./acre to 330 lb./acre of cured leaf.

Table I—Mubende

Grade	Price lb.	Poundage	Value to growers
	Shs. cts.		*Shs. cts.*
I ..	1 50	641	961 50
II ..	1 10	27,109	29,819 90
III ..	0 70	8,256	5,779 20
IV ..	0 40	19,108	7,643 20
TOTAL ..	..	55,114	44,203 80

Table J—Fire-cured Tobacco Production

	Acreage					Poundage				
	1961	1962	1963	1964	1965	1961	1962	1963	1964	1965
Bunyoro ..	3,219	4,855	6,500	6,679	6,696	1,319,832	2,174,929	2,123,086	3,545,240	4,001,452
Mubende ..	308	289	305	237	167	101,653	83,400	75,828	173,032	55,114
West Nile ..	1,001	1,500	1,435	1,537	4,130	527,047	977,819	802,377	1,424,103	1,993,135
Total ..	4,528	6,644	8,240	8,453	10,993	1,948,532	3,236,148	3,001,291	5,142,375	6,049,701

(d) Tea

64. The importance of tea as a crop continued to rise, and it is now the third most important cash crop. With the recent encouragement to expand tea production, the total acreage increased from 27,176 to 29,385 acres. Cash return to growers has increased from £2,787,000 in 1964 to £3,043,228 in 1965.

65. Many farmers have borrowed money through The Progressive Farmers Loan Scheme to enable them to establish plantations. These farmers have been keen to follow advice given by Departmental field staff.

66. The tea industry is attracting investors from many walks of life which is an indication of the profitability of the industry. The total acreage planted by out-growers totalled 4,008 acres which compares favourably with the 1964 acreage of 2,668 acres.

67. Considering the difficulty experienced the previous year in organising the distribution of tea stumps, planting material was distributed in time in most areas, but there was some difficulty in sorting out the administrative procedures over finance and stump loans. By the second half of the year this was sorted out and all districts except Bunyoro met their planting targets.

68. The table below illustrates tea production during the last five years.

Table K—Tea Production

	1961	1962	1963	1964	1965
Made tea (*lb.*) ..	11,278,158	13,876,370	13,601,977	16,789,436	18,433,505
Value to growers (£) ..	1,953,377	2,385,075	2,292,484	2,787,000	3,043,228
Export overseas quantity Made tea (*lb.*) ..	8,498,560	11,607,680	12,107,200	13,422,080	14,934,080
Value (£)	1,472,083	1,996,980	2,040,672	2,211,596	2,388,418

(e) Sugar

69. Because of legalisation allowing the sale of Enguli by licensed brewers, there was a marked increase in the demand for cane. Sugar estates in Buganda in particular increased their purchases from neighbouring outgrowers. In other areas, especially in the Eastern Region, there was an increase in acreage under sugar cane most of which was grown on swamp edges. It is estimated that total acreage under sugar cane in 1965 was 46,087 which compares favourably with the 1964 figure which amounted to 46,587 acres.

70. Total sugar production, however, did not increase, this as a result of dry spells of weather which adversely affected the cane. At Kakira, where irrigation was used, total production was 63,947 tons as compared to 71,600 tons in 1964. The country-wide total was 115,670 tons in 1965 as compared to 123,551 tons in 1964 and total value was £4,770,606 in 1965 as compared to £5,379,369 in 1964.

(f) Cocoa

71. In Buganda the acreage under cocoa continued to increase, and the sale of pods acted as a stimulant to cocoa growing. Mukono Division is the main area where cocoa is grown and pods worth Shs. 38,660/85 were collected in this area.

72. During the year under review 673 acres were planted compared to 363 acres planted in 1964. This brings the total acreage under cocoa to 1,591 by the end of the year. Wilt and *helopeltis* caused considerable damage to established trees, and in addition the monkeys were other pests whose control was not available at the time.

73. Ten (10) cocoa trials established in the cocoa growing areas were maintained, but these trials did not do well due to bad weather conditions.

74. Seven cocoa assistants were engaged and their main duty is to advise cocoa growers.

75. In the Western Region, 51 acres were planted to cocoa during the first rains, and a nursery bed holding 24,000 seedlings was established. This was sufficient to plant an additional 50 acres. Cocoa planted in 1960 continued bearing. Harvested pods delivered to the Department of Agriculture had to be destroyed because the amount of pods delivered was insufficient to justify the erection of a fermentary.

(g) Maize

76. In all areas, except Lango and Acholi where farmers grew maize just sufficient for home consumption, the acreage planted to maize increased appreciably. In Buganda the early rains maize was hit by the dry spell, and the farmers were discouraged from extensive planting. There was, however, a tremendous increase in acreage planted to maize during the second rains, and the total acreage was more than the previous year's total. Elsewhere, there was equally extensive maize growing to both the first and second rains but the dry spells which prevailed during the first rainy season reduced yields. Maize meal price increased as a result of the shortage of food in many areas, and towards the end of the year it was necessary to impose a restriction on the export of maize meal outside the country.

77. Nevertheless, there was an appreciable export overseas and to neighbouring countries. Overseas exports of milled and unmilled maize in 1965 totalled 3,874 tons valued at £86,886. It compares favourably with the 1964 export which was 2,924 tons valued at £58,084. Exports to Kenya and Tanzania of unmilled and maize germ meal amounted to 3,100 tons, worth £59,376.

78. A large amount of maize in most areas is still eaten green.

79. The estimated acreage under maize in 1965 was 693,100 acres as against 537,500 in 1964. The big increase is attributed to a threatened food shortage situation and the relatively high price which prevailed during the year. The price in the principal markets varied between 10 to 20 cents per lb.

(h) Minor Crops

80. In Mukono, early in 1965, farmers were discouraged from planting Vanilla as a result of the low price and delay in payments which were current then. However, when 16 farmers visited Nsimbe and Lubowa's estates to learn better methods of growing Vanilla, considerable interest was aroused and more Vanilla was planted.

81. Ginger continued to be grown in Butambala and Mawokota counties of Buganda. The acreage under ginger is increasing gradually but steadily. Trials were started at Buteyongera in Butambala where observations were made to find out the response to N.P.K. fertilizer. Another trial was at Namyoya where local ginger performance was compared with that of a Jamaican variety.

82. Apart from Mityana Division where a certain amount of custor seed was grown, production was almost negligible elsewhere. A steady flow of the crop offered for sale was from north Singo and Buwekula, but the exact acreage was not known.

83. Quite a large acreage of groundnuts had been planted in the first rains, but owing to the prolonged dry spell during the growing period, plus rosette attack in some areas, the yield was adversely affected. The second rains crop did well in most areas, especially in Buganda and West Nile. In the Eastern Region some farmers were discouraged by lack of rain, and planted cotton instead of groundnuts. Because of an insufficient supply of groundnuts, the price remained relatively high, averaging between 35 cents per lb. of shelled nuts to about one shilling. The controlled Buying Season opened in late July 1965, but purchases of groundnuts had already taken place some months before this date as a result of a speculation of shortage of supply. Because of the lucrative price, farmers were very much tempted to sell all their crop and it was necessary for the field staff to launch a campaign to persuade farmers to preserve sufficient groundnuts for planting during the next season.

84. The acreage planted to groundnuts was 582,100 acres compared to 617,500 acres in 1964. Of the total yield, 412 tons, worth £31,520, were exported to Kenya and Tanzania. A total of 60 tons of groundnut oil, valued at £8,645, were sold to the same countries. Export overseas of groundnuts amounted to 316 tons and earned £24,595.

85. Owing to shortages of groundnuts, the Busoga Co-operative Union closed down the groundnut unit at Nsinze as it was not economic to operate it with the low turnover of groundnuts.

V. AGRICULTURAL DEVELOPMENT AND EXTENSION WORK

(a) Soil Conservation

86. The importance of soil conservation remains one of the major aspects of maintaining the natural resources of this country. In the Eastern Region the existing paspalum strips and bunds were generally well maintained, and new ones were laid down by some progressive farmers. It was in the Western Region where little attention was paid to the proper maintenance of the paspalum bunds

and strips, but an intensive campaign was carried out and the response has shown some dividends. In Buganda, poor weather conditions discouraged farmers from keeping the bunds and strips to a satisfactory standard. In all areas, field staff emphasised the importance of soil conservation measures, and in many areas farmers showed keen interest in adhering to the advice by strip cropping, mulching, paspalum bunding, ridging, and leaving three-yard grass strips between 35 yard-strips. The measures adopted depended on the topographical and pedological features of the area.

87. The usual practice of carrying out Agricultural Competitions was carried out in various parts of the country. The competing spirit was variable. Where local chiefs assisted in the organisation of the competition, there was a marked improvement in the standard of cultivation practices.

(b) Progressive Farmers

88. Owing to a high rate of default in repayment, the Progressive Farmers Loan Scheme was suspended in June 1964 and there was a general decline in the amount of attention paid to this group of farmers. The standard of management of the farmers designated "progressive farmers" had declined to such an extent that warranted down-grading them. In Northern Region however, the number of progressive farmers increased, and many attended courses at the District Farm Institute and paid visits to Serere Group Farm and other places of agricultural interest. In Lango District, some 32 women in Alito sub-county organised themselves into a farming group and opened up a 16-acre block for cotton. The standard of management demonstrated by the group was so high that it attracted the attention of both the staff of this Department and the District Administration.

89. Due to a shortage of funds, subsidy was not available during the second half of the year, but the subsidy issued on various items earlier in the year was extensively used; most important of all in terms of value and number, was the subsidy on D.D.T. insecticide.

90. The Co-operative Credit Scheme continued to operate and a total of over £200,000 was lent to credit worthy co-operative societies.

(c) Animal Husbandry and Pasture Work

91. The dry spell which was a feature of 1965 did not only affect food crop production, but animal production also. There was a shortage of grazing early in the year in most parts of the counrty. In Teso and Karamoja, where cattle population density is high, there was overcrowding in swamp edges where grazing was available, and in Karamoja this led to the spread of Contagious Pleuro-Pneumonia, but the disease was kept under control by the Ministry of Animal Industry, Game and Fisheries. Apart from Northern Region, due mainly to local opposition, fencing continued satisfactorily despite lack of subsidy on barbed wire in the second half of the year.

92. In Buganda, increased development in the cattle industry continued. Spraying against ticks is common practice especially by exotic cattle keepers. Improvement of local breeds and the introduction of exotic breeds were the main

features of development. There were over 25 ranches in Buruli, and an increase of exotic cattle from 5,738 in 1964 to 7,514 in 1965 in Buganda alone. Also there was an increase in the number of pigs from 16,031 in 1964 to 31,470 in 1965.

93. In Western Region, a large number of exotic cattle were introduced into Toro, and in Eastern Region, into Busoga.

94. Courses on animal husbandry were held in many District Farm Institutes to help farmers improve their standard of management. The favourable response to the courses was illustrated by farmers' enthusiasm in following advice, purchasing improved stock, fencing and even buying improved legume/grass mixtures.

(d) Irrigation and Swamp Reclamation

(i) Ankole

95. Some 20 acres of swamp was reclaimed in Shema county and about 300 acres in Igara county of Ankole. The reclaimed land was used mainly for the production of sweet potatoes and finger millet. There is shortage of land in these counties and more reclamation will help in relieving the population pressure.

(ii) Kigezi

96. In past years considerable land reclamation work has been carried out in Kigezi. This year, due mainly to a shortage of funds very little work was done, farmers however concentrated on developing land already reclaimed. Various crops were grown but predominant was vegetables. It is hoped that after this consolidation period, funds will be available for further reclamation work.

(iii) Toro

97. The Mubuku Irrigation Scheme suffered some setback from damage by game animals. The situation was checked when the Game Department sent in staff to shoot the animals. One hunderd and ten were killed.

98. A number of trials were conducted on the scheme and analysis of crops grown is being carried out at Kawanda.

(iv) Eastern Region

99. In Busoga, large scale irrigation continued on the Madhvani Sugar Estate. At Kasolwe, the new citrus nursery was irrigated from a nearby dam by an engine driven pump.

100. At Moroto, in Karamoja, the construction of a water channel on the Prison Farm which was water fed from the Lia River, reduced the costs of the previous mechanical pumping. At Namalu, in Karamoja, a dam supplied water to irregate the small Arabica Coffee plantation.

(v) Northern Region

101. The area in the foot hills of the Agoro Range of mountains, in nothern Acholi District, is sheltered from regular rainfall and quite often experiences very acute dry spells. The inhabitants have devised a system of

irrigation and collective voluntary communal labour is used to construct irrigation channels which divert the rapidly flowing river water from the mountains to the plots. Crops grown are sweet potatoes, maize, sorghum and cassava. The U.D.C. has now taken over the scheme for proper planning and development.

(e) Settlement Schemes

102. Owing to the return of Bugangazzi and Buyaga Counties to Bunyoro, a number of Baganda who settled at Ndaiga left the place to take up fresh settlement in Buwekula County of Mubende. The group which left Ndaiga consisted of people who were hard working, and within a short period they were able to grow food crops. They were, however, unfortunate because the dry spells hit their crops and it was necessary to issue food. The dry spell did not discourage the settlers. They continued to get settled by building houses and opening plots. They were being assisted by two plane-tablers for proper planning of their farms.

103. In the Western Region, refugees in the Oruchinga Valley are now permanently settled, each family being allocated two acres.The dry spells affected crop yields temporarily and in due course, the crop condition improved so greatly that the refugees were able to produce surplus crops for sale. In Toro, there was an estimated 1,700 Rwanda refugees and 2,000 Congolese, many of whom prefered to grow food crops. Refugees who were initially persuaded to grow cotton, later uprooted the cotton in order to plant food crops.

104. In the Eastern Region, good areas for resettlement exist on the plains of Bugisu, but owing to the anticipated Karamoja periodic raids, it was difficult to persuade the people to settle there. Settling the Didinga refugees from the Sudan at Nakapiripirit continued. Dr. Otto Hagenbuchle, representative of the United Nations High Commissioner for Refugees, visited Karamoja and agreement was reached in planning the settlement. Over 350 acres were planted to sorghum and maize but unfortunately the dry spells affected the yield very adversely.

105. Two Israeli experts visited Aputi Gombolola of Kioga, Lango District, to study the possibility of initiating a settlement scheme for school leavers. In the same district, work on tsetse eradication was in progress and the reclaimed area may be used for settling school leavers.

(f) Ox cultivation

106. The ox cultivation drive remained one of the main activities of the Ox Cultivation Unit at Serere. In Buganda and the Western Region where this technique has not yet been popular, extensive demonstrations were organised by the Unit in collaboration with the field staff. The result was, however, disappointing as farmers in the areas showed lukewarm welcome to the technique. This does not mean that further demonstration will cease, but far more extensive demonstrations will be launched in order to popularise the technique.

107. The areas where ox cultivation was widely practised and rapidly expanding were in the Eastern and Northern Regions. In the Eastern Region, each ox instructor arranged to visit individual farmers on whose land demonstration was carried out. The date of the visit was announced in advance in order to enable neighbouring farmers to arrange to attend. This proved most successful as many farmers turned up to see the demonstration carried under peasant farm conditions. Most farmers went home satisfied about the technique and this is illustrated by a steady increase in the use of ox equipment. In the Northern Region, twenty ox instructors were recruited and trained in ox work at Serere. When they started working, they concentrated their effort on the training for the one-man ox control which is slowly and steadily becoming popular. It is hoped that in future the staff will popularise the use of ox equipment.

108. It was planned, in 1965, to build three District Farm Institutes in Bunyoro, Acholi and Mityana, but during the planning process of the Second National Development Plan it was found necessary to increase the number of the Institutes so that each district has its own D.F.I. Because of shortage of funds the actual constructional work did not begin in 1965 as originally planned, but it is hoped that work might start on some of the new Institutes in 1966.

109. The Institutes continued to offer courses of short duration lasting, generally, one week. Various subjects on agriculture were covered and in some cases specialised courses were given such as ox cultivation and tea production. Courses were given not only to men, but also to farmers' wives in order to give balanced training to the rural population.

110. Opportunities were also given to other departments to train their student farmers and/or staff. In-service training was also organised at the Institutes for departmental field staff. The various courses kept all the Institutes busy throughout the year, and the total number of students increased from 8,521 in 1964 to 10,086. Follow-up safaris by the Institutes' staff and general field staff revealed that farmers were putting into practice some advice given to them during the courses, thus underlining the important role the D.F.I. is playing in teaching farmers to accept recommendations.

Young Farmers of Uganda Programme

111. This programme was formally initiated in 1964 when the National Organiser, a U.S.A.I.D. technical expert, toured the country to have preliminary discussion on the formation and running of clubs. The idea was warmly received, and in 1965 the staff attended courses on the best ways of organising and running the clubs. The response to the staff campaign was remarkable, and in 1965 alone there were 3,153 members having various crop and animal projects. Indications are that the programme will become very popular.

Farm Schools

112. There was no change in the number of Farm Schools and their status as reported in previous years. The Department continued to assist the graduates of the schools to settle in rural areas as progressive farmers, but their settlement

has always been difficult due to social and economic factors beyond the control of the graduates. This problem is now a major subject of investigation by the field staff to earmark some of the major problems hindering progress in settling these farm school leavers, and it is hoped that in future a solution would be found.

VI. MECHANICAL CULTIVATION

(a) General

113. The year 1965 was one of advancement in the Special Development Section. The mechanical cultivation division utilized fully the 250 new tractors which were received in 1964. Total acreage cultivated and revenue earned were more than double those of 1964. The acreage cultivated in 1965 was 80,846 compared to 34,039 acres in 1964. Revenue earned in 1965 was Shs. 3,002,048/76 compared to Shs. 863,686 in 1964.

114. Of the 341 tractors engaged on group farm work and contract hire services, 336 tractors ran a total of 185,696 hours and averaged 553 hours per tractor. This was higher than the average of about 290 hours per tractor recorded in 1964. The aim was and still is to achieve a greater number of tractor revenue earning hours per year.

115. The total average cost of operating tractors per hour was Shs. 35/30 as compared to Shs. 38/50 per hour in 1964. This operational cost is high despite the higher average number of hours run by each tractor. It would appear still higher if the regional headquarters and Namalere expenses were included.

116. The average revenue earned per hour was Shs. 16/70 as compared to Shs. 14/75 per hour in 1964. This low revenue earning hours is due to, amongst other things, unproductive tractor hours spent when tractors run between small scattered plots. This problem can be overcome if cultivation is consolidated to reduce non-revenue earning runnings and taking care to reduce breakages, regular servicing and mechanical checking. Another problem is due to transporting water on some group farms, slashing grass on camp sites, transporting building materials and firewood for the staff. All these operations were non-productive but essential. Some of these problems are now being overcome by charging for transporting firewood, asking staff to build or repair houses during slack periods and constructing boreholes on tractor bases.

117. In 1965, ploughing was done at the rate of 0·48 acres per hour, disc harrowing 0·93 acres per hour, rotavating was 0·32 acres per hour, planting at 1·13 acres per hour. This shows that the rate of work was slower than in 1963 and this may be attributed to the increase in the number of tractors which the senior field staff could not supervise closely.

(b) Group Farms

118. In 1965, the number of group farms increased from 19 to 32 with a total membership of more than 3,000 people. The group farms had a total cropped area of more than 8,900 acres. Of these, 5,500 acres were under cotton, 750 acres under finger millet, 160 acres under groundnuts, 470 acres under sorghum and 2,020 acres of other crops, mainly bulrush millet and peas.

119. Each of the new group farms was planned by the Land Use Planning Unit of the Special Development Section. The Unit also planned and assisted in the construction of access roads, water supplies, residential housing for staff and crop storage facilities.

Table L—Tractor Cultivation on Group Farms

Region	District	Name of Farm	Cultivated Acreage 1965
NORTHERN ..	Lango ..	Inomo ..	498
		Awangi ..	430
		Aboke ..	640
		Atik ..	—
		Agwingiri ..	—
		Adyeda ..	484
	Acholi ..	Ogwangcan ..	342
		Adak ..	211
		Koich ..	297
		Pagwanga ..	200
	West Nile ..	Pukwero ..	250
		Pawiro Olia ..	64
		Adjumani ..	—
EASTERN ..	Busoga ..	Bituli ..	—
		Kisozi ..	200
		Nabirumba ..	295·5
		Nakabale ..	92·5
		Kapyanga ..	—
	Bukedi ..	Bumiza ..	201·75
	Bugisu ..	Siroko ..	—
	Sebei ..	Suam ..	—
	Teso ..	Amilimil ..	291·8
		Labori ..	374·75
		Alwa ..	421·70
		Kateta ..	233
		Akworo ..	360
WESTERN ..	Bunyoro ..	Akumulikire ..	300
		Kihonda ..	—
		Kitunduka ..	22
		Isimba ..	188
	Ankole ..	Bigyera ..	204
	Kigezi ..	Kihihi ..	—
BUGANDA ..	Mukono ..	Bulawula ..	90
	Mityana ..	Butalale ..	212

(c) Tractor Hire Service

120. The Department's Tractor Hire Service continued to provide mechanical cultivation service to the farmers to enable them to increase their crop production. The policy of tractor allocation remained unchanged in which priority was given to group farms. If the tractors were not fully employed on group farms

they could do contract work in neighbouring farms. Priority was given to credit-worthy society members, and ordinary farmers also benefited from the service upon payment of cash. Acres cultivated increased from 34,039 acres in 1964 to 80,846 acres in 1965.

121. The year also witnessed an increase in number of privately owned tractors. The department gave considerable assistance to the tractor owners by training their tractor drivers, demonstrating ploughing techniques, advice on routine maintenance and repairs, etc. In addition, the Tractor Hire Service of the Special Development Section did not operate in areas where there were privately owned tractors in order to lessen any competition.

VII. INVESTIGATIONS

1. General

(a) Kawanda Farm

122. While total rainfall for the year was only a little below average, distribution was poor. In particular, precipitation during May to August was insufficient for optimum crop growth. Heavy falls were received in the last three months of the year.

123. The lower than average rainfall particularly affected the first rains crops, and poor stands were associated with lower than average yields. The maize variety MH.59 yielded 1,111 lb. per acre, groundnuts 497 lb. per acre of shelled nuts and beans 339 lb. per acre. Haricot beans averaged 1,200 lb. per acre in 10 acres at Ssenge Farm. In the second rains, crops growth was more normal and the variety of maize No. 5314 gave an average grain yield of 1,660 lb. per acre, and the beans gave 764 lb. per acre. The mean yield of seed cotton on a ten-acre block at Ssenge Farm was 828 lb. per acre.

124. The Namalere herd was incorporated in the Kawanda herd and only young stock, from weaning to one year, and a few dry cows are now held at Namalere. This has allowed the transfer of the milking machinery at Namalere to Kyembogo District Farm Institute. Heifers from one year to calving were held at Ssenge Farm and used to graze the 20 acres of "short grass" pasture trials which were established there in the second rains. Contagious abortion recurred in the identical twins, but the main herd now appears to be free of this disease. Some 45 gallons of milk per day were sold to Kawanda staff, 25 gallons to Namalere, and the remainder to a local retailer.

(b) Serere Farm

125. The first three months of 1965 were dry in contrast to the previous three years when the dry season lived up to its name. Small, isolated falls totalled only 3·17 inches up to 25th March when the rains broke. A 40-day drought in June and July markedly affected crop growth, and the yields of late planted groundnuts and cotton were reduced. Sorghum demonstrated its drought resistance by recovering well from this adverse period.

126. August and September were also relatively dry, but the heavy falls occurred in October and the total for the month was 9·55 inches. The 1965–66 dry season was characterised by infrequent but substantial storms which were sufficient to allow arable cultivations to be done.

127. The 67·5 acres of early-planted, sprayed cotton gave an average yield of 1,086 lb. seed cotton per acre. A 14-acre block which was not planted until the end of May was seriously affected by the mid-season drought and yielded a total of 1,766 lb. seed cotton. The 8·5 acres of unsprayed cotton in various experiments produced an average of 524 lb. seed cotton per acre.

128. The bulk farm-crop of groundnuts was also affected by the drought, although not so seriously as the late planted cotton. The average yield of Red Beauty from a 10-acre block on the central farm was 1,616 lb. dried nuts in shell per acre, and on 5 acres of newly opened land the same variety gave 1,535 lb. per acre. The variety, Bukene, averaged 985 lb. per acre from 7 acres.

129. The recommended variety of the sorghum, Serena, produced the excellent yield of 3,400 lb. dried grain per acre from a 15-acre block grown for seed increase in the first rains, thus demonstrating its excellent drought resistance. However, another block of 10 acres was later planted and suffered attacks by central shoot fly, and birds, particularly the latter, to such an extent that the average yield was only 1,137 lb. per acre. The hazard of bird attack is, of course, greatly reduced by planting this crop in the second rains, and the first rains plantings on Serere were undertaken to provide seed for use in the second rains on Group Farms and elsewhere. Hybrid sorghum was produced on a five-acre field in the second rains with the very satisfactory mean yields of 741 lb./acre of hybrid seed and 500 lb. per acre of the pollinator SB65 .

130. The eucalyptus trees planted on 2½ acres in 1962 were cut, and the poles sold for a total of Shs. 1,885. In addition to the straight poles sold for building, the plantation yielded a quantity of crooked timber for firewood and large numbers of plot pegs.

131. The stumps are now regenerating and the copice shoots already exceed 7 feet in height three months after cutting. There appears to be every prospect of a number of lucrative cycles of this crop from the one initial planting.

132. In order to relieve the pressure on land which is developing with increasing numbers of professional staff, a start was made on rehabilitating the poorer permanent pastures which are dominated by *Imperata Cylindrica.* The procedure adopted is to plough out, crop for one or two years to deal with the perennial weeds, and then resow with improved grasses and legumes. It is hoped to clean approximately fifty acres this way by the end of 1966.

133. A total of 94,743 man-days were worked in 1965, compared with 93,175 in 1964. Increases in senior staff have allowed a considerably greater volume of experimental work to be undertaken, and the fractional increase in labour used reflects a creditable rise in output and efficiency.

2. CROP INVESTIGATION AND RESEARCH

(a) Annual Crops

Cotton

134. SATU, the Serere strain of Albar, continued to be bulked in the segregated acres of Teso as the replacement for B.C.177, the present commercial variety of Eastern and Northern Regions. Trials at centres throughout the two regions once more demonstrated the yield superiority of Albar selections over

B.C.177. SATU65 gave an average increase in lint yield of 22·1 per cent over B.C.177 at 17 centres in the "S" area. A number of Albar types selected at Namulonge out yielded SATU in the district trials and these will be further tested and subjected to re-selection in 1966.

135. The main emphasis in the breeding programme continues to be on re-selection within the Albar strains, in an attempt to produce higher yielding types better adopted to local conditions, and with increased maturity and yarn strength. Screening of material in the breeding programme for resistance to bacterial blight, *Xanthomonus Malvacearum* is carried out to ensure that selections maintain their resistance to this disease. Current hybridisation programmes are aimed at introducing larger balls "Stormproofness" and other desirable characters into Albar.

136. A range of cotton herbicides was screened and scoring techniques were devised and evaluated. A number of those tested were sufficiently promising to warrant further studies in 1966. This investigation is, of course, of potential application to the large blocks of cotton on Group Farms.

137. District sowing date and spacing trials confirmed the previous findings that close spacing and early planting are necessary for maximum yield. The closer spacing of 2′ x ½′ yielded 6 per cent more seed cotton than the former spacing of 3′ × 1′. Pronounced yield losses with late sowing were again demonstrated.

138. Routine variety and progeny bulk trials prepared at Namulonge were planted at Kawanda.

3. Maize and other Cereals

(i) Maize

Breeding

139. A full series of trials was carried out at Kawanda in both seasons. Selection within the proven variety "White Star" (5314 R.R.M/58) continued. Of ten hybrids from Israel introduced via the Maize Breeding Centre at Kitale only two, with little injection of Helminthosporium blight, performed well. Initial observations were made on yellow varieties of maize.

140. District variety trials were carried out at 31 centres throughout Uganda in the first rains, and at 16 centres in Eastern, Western and Buganda Regions in the second rains. The varieties planted were "White Star", "Western Queen" (mlt/59), Kitale Syntetic II, Hybrid 611 and Hybrid 631, the latter two being varieties commercially available in Kenya. Under the short season and erratic rainfall conditions of the first rains, the variety, Western Queen, gave highest yields at the majority of centres in Eastern, Western and Buganda Regions. However, in the Northern Region, with long rains, and under irrigation at Mubuku, Hybrid 631 did best. This variety was definitely superior at all centres, but not in the second rains trials. At Kawanda a yield of 31 bags (6,200 lb.) was obtained.

Agronomy

141. Planting trials showed a clear superiority from early planting in both 1st and 2nd rains, yields of the first compared with the third planting date being up to three times greater. In spacing trials 4 ft. x 9 in., 3 ft. x 12 in., 3 ft. x 18 in.

and 2 ft. x 18 in. gave best yields with "White Star maize. A routine dressing of nitrogenous fertilizer (40 lb. N per acre) is being applied to all plantings of maize at Kawanda.

142. Several tons of pedigree seed of the recommended varieties "White Star" and "Western Queen" were produced for distribution to the farmers.

143. Through the kind co-operation of a miller in Masaka, milling tests were carried out on four varieties of maize. The best quality flour was given by "Western Queen" and the highest out-turn by "White Star".

(ii) Sorghum

Breeding

144. The back crossing programme to improve hybrid parents and varieties made good progress at Serere. Newly developed lines were sorted in large yield trials and the best were grown in the dry season for multiplication and more thorough testing. More attention was being given to the white quality grains, and 296 selections of these types were grown in trials. Locally developed male-steriles are now ready for testing in hybrid combination.

145. The application of recurrent selection methods to sorghum through the use of male sterility was further developed and showed promise. The Coes genetic male-sterile was crossed to a wide range of available material.

146. The breeding programme to produce resistant sorghum varieties from crosses with Namatare was continued. There existed two types of resistance, and recovery resistance. There was negative correlation between the two forms, but this would not be great enough to cause difficulty. The Entomologist at Serere co-operated with the E.A.A.F.R.O. Sorghum Unit in the Central Shoot Fly work, and two spray trials indicated that Thiodan (Endosulfan) will give satisfactory control of the pest.

147. Results from district trials demonstrated that Serena has a useful measure of resistance to striga of the same order as that of dobbs.

148. Two tetraploid crosses, 30 x 15 and 2 AD x 4, showed great promise. They have good cultivated characters, without the conspicious hairy glumes which are features of many of the tetroploids. They are being actively developed, and have been used as parents in a wide range of crosses. There was interesting evidence that a number of the tetraploid lines outcross freely, which will be of value in developing recurrent selection methods. The tendency to outcross was presumably inherited from *sorghum halopense* via *Sorghum almum*.

149. Cytological studies on the problems associated with the successful development of tetraploid sorghum commenced during the year under review.

Varieties and Hybrids.

150. The regional comparison of hybrids and varieties showed an advantage of over 50 per cent in average hybrid yield at 8 very diverse sites. Yields were Serena, 1,985, H x 57 2,540, H x 61 2,700 lb. per acre. Triple hybrids showed no useful advantage over ordinary single cross hybrids. Sixty-one fresh hybrids were made and tested in preliminary yield trials, and 16 hybrids from India were also evaluated. The latter are of interest as their grain quality was good,

and three of them showed promise of yielding well in the second rains here. More seed has been requested.

151. *Yields.*—Serena yielded an average of 1,835 lb. of grains per acre over the regional trials in 1965, while the hybrids H x 57 and H x 301 gave 2,335 and 2,605 lb. per acre respectively. Bulk yields of Serena at Serere were satisfactory being 3,400 lb. of grain per acre over 15 acres in the first rains, while at Inomo Group Farm the yield was estimated as over 200 lb. an acre on some 60 acres. In trials, Serena yielded over 5,000 lb. per acre at Serere, while the hybrid H x 57 gave 5,300 lb. per acre and H x 301 gave 5,915 lb. per acre.

152. The varietal collection was grown as usual, and in addition, the world collection was received from India.

(iii) Millets

153. The U.S.D. A.A.R.S. in conjuction with AID has established a unit at Serere.

Finger millet

154. Finger millet selection and multiplication were done in the Serere material, and crosses to transfer blast resistance carried out. The world collection was received and grown.

Bulrush millet

155. Continuing from the work begun by the Uganda Department of Agriculture botanists, good progress was made towards the development of successful millet hybrids. The development of a local male-sterile will present no problems, and restorer lines have been identified for use as pollinator parents. A preliminary evaluation of hybrid made indicated that the yield may double the ordinary varieties. There is much scope for development in this crop.

(iv) Wheat

156. The wheat programme was carried out in close collaboration with the Kenya Wheat Breading Station at Njoro, who have been supplying seed of wheat varieties suitable for testing in Uganda.

157. Observation plots for 31 varieties were planted at Zombo, Kyembogo, Bukwa, Mubuku and Kawanda. Seven varieties of oats and barley were grown at some of these centres in addition.

158. Variety trials comparing eight wheat varieties were planted at Zombo, Kyembogo, Bukwa and Kachwekano during the second rains. Yields from Zombo and Kachwekano were good, up to 1·75–2 tons per acre of grain being recorded.

(v) Rice

159. With increased interest in this crop, a preliminary programme was initiated. Information on present cultivation practices was obtained through the co-operation of staff in districts where rice was grown, and a collection of local varieties was planted in observation plots in the Kawanda swamp in November.

4. Oilseed Crops

(i) Groundnuts

160. The groundnut trials at Serere and at district centres gave good yields despite the mid-season drought, emphasising that even in a relatively unfavourable year, if good seed is planted early, the crop can be relied on to give a good return.

161. Over a dozen trials were carried out at Serere and other centres on the use of menazon to control the rosette virus. For the third year running, the results were very promising and the previously reported increases in yield and quality of nuts were confirmed. A tentative spray regime has been recommended for the control of this disease, viz 4 sprays of menazon, applied as Aphex 70, at ten-day intervals commencing ten days from germination. Six ounces of chemical are used in this regime but it is possible, from the results so far available, that the strength of the chemical may be reduced to half of that currently used and still give adequate control.

162. In the district variety trials, Mani Pintar and Bukene again performed well and bulking of seed supplies for issue in selected areas will commence next year. No alternate branching groundnuts outyielded Mani Pintar in preliminary screening trials at Serere although Mt. Makulu Red, a red shined selection from Mani Pintar, was good. Some Jumbo Virginia varieties were grown under irrigation at Mubuku to provide samples for trade evaluation. A number of Spanish varieties from the collection were noted as possible replacements for Bukene and will be tested further. The Valentia B1 maintained its superiority in the bimodal rainfall areas over all other types, and hybridisation and selection to produce a replacement with brown shined kernels was continued. Very promising selections were obtained from Valentia x Bukene and Valentia x short brown Valentia crosses.

163. Work to obtain a short term rosette resistant variety continued, and the posting of a laboratory technician to Serere at the end of the year will help greatly in routine oil content analyses which have previously had to be sent to Kawanda.

164. District variety trials, prepared at Serere, were planted at three centres in the second rains in the high rainfall areas of Uganda. At Kawanda, yields were low in the first rains, the Spanish variety B239 and Mani Pintar gave highest yields. Multiplication of improved varieties was initiated at Mubuku and Kyumba.

165. Further observation and varietal comparison were carried out on Bacterial Wilt of groundnuts at Bukalasa.

(ii) Sim-sim

166. The sim-sim breeding programme continued with the first crosses reaching the F4 generation. Sure, very promising selections were obtained from crosses between local types and imported U.S.A. varieties. A large collection of material was received from Tanzania and some very useful lines from the U.S.A. which contain the genes for placental attachment and papershell capsules which will be used in crosses to produce less shattering types.

(iii) Castor

167. A small collection of types collected within Uganda, together with a few imported varieties, was planted out for observation and maintenance at Kawanda.

5. Beans and other pulses

(i) Beans

168. The bean breeding programme has been continued at an expanded level at Kawanda and has now reached the stage where bred and introduced selections are sufficiently bulked for evaluation in variety trials. Thirty (30) new introductions were made during the year and these were planted out together with the remainder of the breeding collection. Hybridisation, progeny testing and selection were continued and preliminary variety trials were planted at Kawanda and Bukalasa during the first and second rains. New varieties of Banja derivatives, white haricot varieties and Tanzania black hybrid progenies, were among the varieties tested. Final District variety trials were planted at one centre (Bukwa) in the first rains and at 16 centres throughout Uganda in the second rains. The varieties compared were Kawanda Nos. 2 (Banja), 35, 47, 68, 212 (Haricot). Individual performance varied between centres according to climatic and disease influences, but in general, varieties 35, 47 and 212 yielded well.

169. Further spacing trials were planted at Kawanda and Bukalasa in the first rains and at 5 district centres in the second rains. After several seasons of these trials, it is concluded that the optimum seed-rate for both bush and semi-climber types is 2 feet or 26 in. rows and 2–4 seeds per foot in the row. The effect of spacing on yield is more critical for both types than that for semi-climbers which tend to produce compensatory growth at low populations.

170. The diseases of beans with their important effects on crop yields have continued to receive detailed attention. The effects of different fungicides and of fertilizers, insecticides and fungicides, separately and in combination, were examined at Kawanda in the first rains. Disease incidence was low and there were no responses to either fungicide or fertilizers. However, the use of insecticide produced a marked yield increase. The possibility of economic control of diseases by fungincides and by roguing out plants with primary infection was studied in further trials in the second rains at Kawanda. Disease reaction, particularly to rust and anthracnose, was studied in six microplot trials scatterred throughout Uganda. Further race differentiation studies, types, and screening of new introductions were conducted with Anthracnose, *Colletotrichum Lindemuthianum*.

(ii) Soya Beans

171. With an increasing interest in this crop, a breeding and agronomy programme was initiated at Kawanda.

172. Through the co-operation of district staff, a collection of soya bean types at present grown by farmers in Uganda was sent to Kawanda to add to the varieties already in the collection. These were planted in unreplicated observation plots in the second rains at Kawanda. A further collection of 74 imported varieties was received from the National Agricultural Station, Kitale, for planting in 1966. In a variety trial comparing eleven varieties at Kawanda, yields of up to 1,500 lb. per acre were recorded. The crop matures in about 120 days. A seed bulking plot of a Kenyan commercial variety with only a 15 per cent stand yielded 560 lb. per acre with inoculation.

173. In a sowing date trial at Kawanda in the second rains, highest yields were obtained from the earliest planting.

174. A bacterial infection and symptoms of virus attack were among the diseases observed in soya bean. The need for artificial inoculation with rhizobial bacteria is being studied further.

(b) Perennial Crops

(1) Robusta

(i) Breeding

175. During April, the eight polycross progenies set in 1963 were planted in a trial on the site of the former 1937 Erecta plot at Kawanda. By 1971, it is hoped that this trial will reveal the general combining ability of the clonal parents. Seedlings raised from ten specific crosses of robusta clones were planted on Block XI at Kawanda in September. In both these trials seedlings of local origin served as a standard. Three-plant clones of 40 mother trees, which have since been grubbed from the former foundation stocks of breeding progenies, were planted adjacent to the polycross progenies and are being perpetuated for future use.

176. At the end of the year a start was made using colchicine to induce polyploidy in the interspecific ($2n = 33$) hybrids, which always set a poor crop with a high percentage of pea berry. Selected trees are being treated by applying colchicine to cuttings and seedlings at various stages of development. In both cases a range of concentration and exposure times is being used.

(ii) Pathology

177. Based upon a review of all previous results, a recommendation was issued for the control of red blister disease (*Cercospora coffeicola*) requiring three annual applications of a fungicide spray containing 0·10 per cent copper used at high volume in mid May, June and July. The better disease control obtained using copper concentration (w/w) of 0·25 per cent and 0·5 per cent is of no practical advantage since these concentrations reduce the yield response which at 0·10 per cent copper can vary from two to six pounds, the figure depending upon the incidence of disease. It is presumed that the higher concentrations are phytotoxic.

178. Microbiological factors limiting the spoilage of stored robusta coffee were described in a paper by D. Butt written for the London Symposium on Microbiological Deterioration in the Tropics, a summary of which is attached to the report as an appendix.

(iii) Agronomy

179. From investigations on various types of ground management it appears that mulching is slightly superior to clean weeding in terms of yield of coffee. Clean weeding is in turn considerably superior to the use of ground covers. Chemical weed control tends to have a slight advantage over other ways of keeping the crop clean, and hand cultivation is better than mechanical cultivation. However, the costs of these various forms of management vary from an estimated Shs. 665 per acre for blanket mulching by hand (costing a man-day at Shs. 5) to Shs. 90 for a cover crop slashed down by hand. Comparable estimated costs on the same basis are Shs. 600 per acre for clean weeding by hand, Shs. 210 per acre for weeding with disc harrows and supplementary hand labour, and Shs. 140 per acre for chemical control of weeds. An individual farmer will naturally be influenced in his choice of system by the relative availability of labour and capital, but it may be noted that the maximum returns per acre and per man-day are both achieved by using chemical weed control.

180. It was confirmed that only nitrogenous fertilizers significantly increase yields. Assuming the price of nitrogen to be Shs. 1/27 per lb. and the growers price for kiboko to be in the range 40–50 cents per lb., maximum economic responses are obtained from applying 100 lb. N per acre to coffee which is weeded or mulched, and 150 lb. N per acre where there is a ground cover.

(2) Arabica

(i) Breeding

181. Clones of 31 F1 Kawanda hybrids were planted as single-tree plots in ten randomised plots on Block XI at Kawanda. Most of these clones were propagated from F1 bush raised from the crosses Rume x K7, Rume x Kents and Geisha x Kents.

182. Two trials in West Nile and six in the Eastern Region completed the circuit of fourteen trials designed to test three selections from Ruanda which might possess some tolerance or resistance to Coffee Berry Disease. They were being tested for general performance and quality and are compared with three currently recommended varieties.

183. In June, a second consignment of rooted cuttings was received from the Coffee Research Station, Lyamungu, Tanzania, to allow the establishment of a second trial of the eight Arabica hybrids which exhibit hybrid vigour. This new trial will be in Bugisu and will be one of several in East Africa.

(ii) Pathology

184. Red blister disease was recorded at Kawanda on a few trees of Bugisu Local, K7 and KP228 in April. This is the first case of R.B.D. on a pure arabica genotype. With the possibility of the danger that this form of *Carcospora* can be transmitted on seedling leaves, there is a need to observe closely variety trials planted outside Kawanda since most planting material is distributed from here.

185. The 1964–65 Coffee Berry Disease spray trials in Kigezi confirmed that valuable yield responses are obtained using medium volumes. In trials using a standard treatment volume of 40 gal. per acre (= 680 trees), the 6-spray schedule using 10 lb. of a 50 per cent copper fungicide per application gave yield responses of 5·3, 6·3, 2·5 and 4·8 cwt. clean coffee per acre. There was a marked dependence of response upon the standard of crop husbandry.

186. Additional results indicated that an inter-spray interval of two weeks is less effective than the recommended three-week interval. Using the standard schedule with 40 gal. per acre, the 50 per cent copper fungicide can be reduced from 10 lb. to 5 lb., and "Tuzet" at $\frac{1}{2}$ lb. per acre per application can be substituted for the copper fungicide. The mid-season sprays timed to coincide with the fly-crop flowering may be of greater value than previously supposed, and this period of time requires more investigation.

187. New follow-up trials commenced in Kigezi with the main flowering in August and simultaneously, field team control commenced based upon a new recommendation requiring that the 50 per cent copper fungicide be reduced to $7\frac{1}{2}$ lb. per application per acre, in 40 gal.

188. During the main flowering in Sebei, C.B.D. spray trials were started on twenty farms.

189. The five sprays of 0·25 per cent copper, applied annually to control rust in the rust-fertiliser trials in Bugisu and Sebei provided very significant yield increases in south, central and north Bugisu and in Sebei. The mean responses of cherry per tree (lb.) were 5·82 (south), 5·16 (central), 3·59 (Mankiya), 18·66 (north) and 4·97 (Sebei).

(3) Cocoa

(i) Breeding

190. Variety trials were maintained and recorded although this work was hampered by lack of suitable staff in the field.

191. Under the short term breeding programme, the F1 hybrid amelonado x amazon progenies were planted out at Kituza during March together with the standard F3 progenies. Establishment was satisfactory and differences in seedling vigour were already beginning to show by the end of the year.

(ii) Agronomy

192. Investigations to compare early vegetative growth with subsequent cropping ability were continued, as were trials to determine the possibility of tree selection based on vigour in the seedling nursery.

193. A trial involving the interplanting of robusta coffee with cocoa is showing promise. At 2 years old the cocoa has shown significant responses to mulching and the digging of saw dust into the soil before planting, but no response to nitrogen. Overhead shade of *Maesopsis eminii* was planted in March and the coffee will be gradually cut back and removed.

194. In the Lime/Nitrogen/Shade trial at Kituza the lime was applied and the shade trees planted during the year. The cocoa will be planted when the shade is sufficiently developed. *Grevillea* appeared to establish more readily than *Maesopsis* under the rather dry conditions experienced.

(iii) Pest and Diseases

195. Preliminary investigations into the cause of cocoa wilt in Uganda show that the disease is caused by a soil-borne fungus *Verticillium dahliae* Kleb. This disease, which was first observed at Kituza in 1960, is now being reported in more and more areas throughout the country. Detailed examination has shown that the fungus is normally confined to a few of the lateral roots only. This results in only a small sector of the trunk being invaded, but unfortunately at the jorquette the vascular elements are interconnected and as a result the invading mycelium can penetrate all five fan branches and causes death of at least part of the crown. Research on the disease included trial of various methods of artificially infecting plants. Artificially inoculated seedlings in the glass-houses have not yet shown symptoms. Other experiments are directed towards finding out common hosts and indicator plants for the fungus. Also an effort is being made to find out whether nematodes play a role in the incidence of the disease. Plant parasitic eelworm (Nemas) collected from Kituza include: Helicotylenchus sp., Tylencharhynchus sp., Pratylenchus sp. and Aphelenchoide sp. However, the population of these species in the soil near healthy and diseased trees does not show any significant difference.

(iv) Collar Crack

196. The fungus isolated from a few diseased samples brought from Kijude (Salama Estate), Kyenzige (Bunyoro) and Bwamba, has been identified as *Armillaria mellia* (Vahl. Fr.). The characteristic symptom of the disease is the cracking of the tree at its base just before and after death. The cracks are numerous inside and are covered with white mycelium which has a characteristic smell.

(v) Capsid cankers

197. These are heavy on cocoa at Bujenje (Bunyoro) and to a lesser degree at Namyoya and elsewhere. Isolates from these cankers have been studied and partly identified as *Fusarium;* the perfect stage of *Callonectria regidiuscula* (Berket Brm) is yet to be confirmed. The fungus invades wounds primarily caused by capsid bugs (Sahlbergella) and spreads the damage causing deep-seated cankers and/or death of the branches. Both capsid and Helopeltis damage were observed to increase with age of the plantings.

198. The year saw a great increase in the amount of monkey damage, particularly where cocoa is planted in areas of selectively thinned forest, and to date no effective control measures have been found. Farmers in Bunyoro formed hunting parties and effected a certain measure of control, but elsewhere farmers appeared apathetic towards the problem.

(*vi*) *Cocoa extension*

199. The following areas were planted with farmers' cocoa during 1965:—

	Acres	*Total to date*
Buganda	501	1,049
Busoga	30	98
Bunyoro	53	128
Toro	50	118
	634	1,393

Total Plantings to date:—

	Acres.
Farmers Cocoa	1,393
Estates	146
Departmental plots	51
	1,590

200. Cocoa seedlings were planted in nurseries to meet the requirements of farmers for 1966.

201. Talks and lectures were given regularly to students and farmers.

(*vii*) *Marketing*

202. The Department continued to purchase pods from farmers, and when economically possible these were transported to the Kituza fermentary for processing. It is proposed to establish fermentaries to process the crop locally in all cocoa growing areas as soon as warranted by increasing production.

3. Chemistry—General

PASTURE AGRONOMY

203. At Kawanda, the laboratory facilities of the section were again fully utilised, 10,600 soil samples and 10,900 plant samples being analysed during the year.

204. The 25 factorial fertiliser trials on annual crops at nine sub-stations were continued. The results from the first 4–6-year cycle of these trials have now been processed by computer at Rothamsted and a full report will be issued shortly.

205. Fertiliser trials on farmers' plots were carried out at 1,018 sites throughout the country. This was a considerable increase in number compared with previous years. The effects of sulphate of ammonia and single superphosphate on cotton, maize, and finger millet yields were studied, as well as the application of single superphosphate to groundnuts. Recommendations from the results to date have been summarised in Technical Communication No. 18.

206. In a trial at Kawanda to study the effects of various fertilisers and management treatments on elephant grass, both nitrogenous and phosphatic fertilisers again significantly increased yields of herbage in the third year and nitrogen increased crude protein content. Fertilisers containing magnesium and calcium appeared to have no effect on grazed plots but increased yields where the grass was mown.

207. The soil regeneration trial at Kawanda was test-cropped for the fifth year and yields were still highest where the plots had been burnt in the resting phase. Both sulphate of ammonia and single superphosphate increased yields by similar amounts in a fertiliser trial on beans at Kawanda. Yields of cotton were significantly increased by the addition of nitrogenous fertiliser at Mubuku, but the irrigation treatment in this trial was without significant effect. Herbicide trials were carried out on maize, beans and groundnuts at Kawanda and a number of promising chemicals will be further tested in 1966.

(*a*) *Laboratory*

208. The two laboratory technicians in training were away for the greater part of the year at the Uganda Technical College. Consequently, the laboratory work was largely confined to routine analysis of herbage samples. A total of 3,600 samples was analysed.

(*b*) *Field Trials*

209. The ground crop on the Permanent Manurial Experiment yielded 1,156 lb. nuts in shell per acre from the control treatment and a mean of 1,689 lb./acre where F.Y.M. had been added in the previous year. There were no significant differences in yield between the various levels of manure. The Soil Physics section of E.A.A.F.R.O. kindly installed soil moisture blocks in one replicate of this trial at the beginning of the season. In the mid-season dry spell it was noted that the groundnuts on the control plot wilted earlier than on those plots which had received manure, although there was apparently more water still left in the profile on the control. It appears that the plants on the control were thus less efficient at extracting the available soil moisture. This study will be continued and the co-operation of E.A.A.F.R.O. in helping to elucidate the causes of the observed effects is much appreciated.

210. Results from the Fertility Experiment again showed the benefits of resting from cropping and the addition of organic and inorganic manures. The resting treatment increase yields of various crops to varying degrees, no doubt partly influenced by their position in the cropping sequence. The biggest yield

increase attributable to resting was 87 per cent in finger millet, followed by 57 per cent in cotton and declining to 23 per cent and 16 per cent in the groundnuts and sorghum crops. Similarly, the application of F.Y.M. percentage increases varied between 77 in the sorghum grown one year after application and 28 in the finger millet which comes into the sequence four years later. Nitrogenous fertilisers gave a 64 per cent increase in yield of finger millet and 41 per cent in cotton, but was less effective with the other crops. The greatest response to superphosphate was recorded in sorghum with a yield increase of 31 per cent.

211. In the last year of the Response Surface Design Fertiliser Trials, large increases in yield of finger millet resulted from the application of F.Y.M. and nitrogen.

4. Entomology—General

(*a*) *Cotton*

212. Five major insecticide trials were carried out on Serere as well as subsidiary trials on departmental farms. For the first time spray regimes with up to twelve applications were tested. These regimes appeared worthwhile both statistically and economically, and it is planned to continue and expand this line of work. Further trials were carried out to study the interactions of sprays with the agronomic factors of time of ploughing and fertiliser application. None of the new insecticides tested during the year were any better than those investigated previously. Routine testing of new brands of D.D.T. miscible liquid continued.

(*b*) *Groundnuts*

213. Over a dozen trials were carried out at Serere and other centres on the use of menazon to control the aphid vector of the rosette virus. For the third year running, the results were very promising and the previously reported increases in yields and quality of nuts were confirmed. A tentative spray regime has been recommended for the control of this disease, viz. 4 sprays of menazon, applied as Aphex 70, at ten-day intervals commencing ten days from germination. Six ounces of chemical are used in this regime but it is possible from the results so far available, that the strength of the chemical may be reduced to a half of that currently used and still give adequate control.

(*c*) *Sorghum*

214. A screening trial in the first rains indicated that endosulfan might control the serious pest known as Central Shoot Fly, *Atherigon indica infuscata*. Further studies in the second rains confirmed that the insect was controlled by this chemical and an increase in sorghum yield was demonstrated.

(*d*) *Army Worm*

215. Small outbreaks of this pest were recorded at Serere and in Teso District early in 1965. The information and specimens collected were passed to the C.I.E. Entomologist at E.A.A.F.R.O. There was no large scale build-up of numbers.

(*e*) *Lantana*

216. The introduced lace bug, *Teleonenai scrupulosa,* continued to defoliate *Lantana camara* in the Serere area and has now spread widely. A disconcerting feature was its appearance on cultivated sesame. This had not been anticipated as sesame is widely grown in the original home of the insect and belongs to a different botanical group of Lantana. Some defoliation of the sesame was reported locally, but breeding of the insect appears to be slow in this plant and there is little likelihood that it will become a preferred host. A careful watch is being kept on the situation.

217. At Kawanda, there are still two vacancies for entomologists. A Makerere graduate was appointed in the middle of the year and commenced studies on cocoa pest, but resigned to do post-graduate studies in insect physiology. The nematological assistant was on a post-graduate course overseas for the whole year. The Spraying Machine Technologist resigned and his successor is currently gaining field experience prior to further training. The laboratory technician appointed last year resigned to take up a teaching appointment and has not yet been replaced.

218. For the third year running no locusts were reported from anywhere in Uganda. Army Worm attacks occurred over most of northern and eastern Uganda but were only severe in Karamoja; some D.D.T. was issued to farmers to protect their crops against the caterpillars.

219. Phytosanitary measures occupied a fair proportion of the senior staff's time. New East African Phytosanitary regulations are in the process of being drafted by the Standing Technical Committee on Plant Import and Export, and the Senior Entomologist attended two meetings at Muguga for this purpose.

Bananas

220. Cigar-end rot was not found this year in Masaka, probably because the severe mid-year drought affected the growth of the bananas and the possible insect carriers of the disease. The dry weather probably also inhibited multiplication of the fungus itself.

Beans

221. Two trials were laid down on Kachwekano Farm, Kigezi, to try and control the Bean Aphid. The first trial was planted in late March and was not attacked by aphid at all, while the second trial, sown in mid-May, was so severely attacked that no crop was picked in spite of several applications of the aphicide menason.

Castor

222. Several $\frac{1}{4}$-acre plots were planted in Northern and Eastern Regions, and a 10-acre block was grown at Kigumba. Pest attack appeared to be exceptionally light this season, consisting of a few Hemiptera and some defoliating caterpillars.

Cocoa

223. The Cocoa Capsid, *Sahlbergella singularis* Hagl., has been found damaging cocoa all over Uganda. Feeding scars are invaded by secondary fungi and die-back follows. Preliminary indications are that attack is only severe at the beginning of the first rains.

Coffee

224. Further experiments on the control of Coffee Berry Borer on both arabica and robusta coffee have been carried out. Two applications of 0·2 per cent active endosulfan at three week intervals gave a 25 per cent overall reduction in the number of bored cherries on farmers' crops. A trial on robusta coffee gave similar results. The analysis of four years results showed that $2\frac{1}{2}$ per cent dusts of aldrin or dieldrin applied to the ground did not reduce the infestation of coffee berry borer in the tree. The percentage of damaged cherries varied considerably from year to year and was not related to the size of the crop. Trials have shown that fenitrothion 50 per cent ml. at $\frac{3}{4}$ pint per acre is as effective as a much heavier rate of malathion in controlling Antestia. In most trials, over 95 per cent kills were obtained and the average yield of coffee cherries per tree was higher on sprayed plots than on unsprayed plots.

225. Fenitrothion, at this same rate, is also better than malathion for the control of coffee lace bug as it has some ovicidal effect as well as killing all the adults and nymphs. However, as with malathion, it is still necessary to apply a second spray four weeks later to kill those nymphs which emerge from unaffected eggs.

226. Stem banding with dieldrin, at approximately $\frac{1}{2}$ per cent, continues to give very good control of the Bixadus Stem Borer. Counts of leaf miner damage on copper spray trials gave no indication of any increase in damage.

Cotton

227. Insecticide trials were run at Kawanda and Mubuku-Sebwe. Pest attack at both sites was very light in the 1964/65 season and no yield increases over the unsprayed cotton were obtained with D.D.T., D.D.T. + toxaphene, endosulfan and trichlorphon. Pest damage counts, however, showed that trichlorphon was giving poor flower bollworm control, while endosulfan gave more elaborate spraying booms when using D.D.T.

228. Spraying machinery trials run at these same sites showed that the Plantector and the Jones's Boom gave just as good control of our cotton pest complex as did more elaborate spraying booms when using D.D.T.

229. A variety spacing trial, run in collaboration with the Empire Cotton Growing Corporation at Mubuku-Sebwe, showed that the variety UKA/IMB was capable of producing well over 200 lb. total seed cotton per acre when irrigated and sprayed, and that there was a slight advantage in planting at 3 feet x $\frac{1}{2}$ foot.

Tea

230. With expanding acreage of this crop in western Uganda more and more pest records are coming in, Red Grevice Mite and Black Tea Thrips are the latest additions.

Sweet Potatoes

231. An exploratory trial on this crop showed that dipping the slips in 2 per cent D.D.T. gave some protection against Sweet Potato Weevil and a 25 per cent increase in yield. A double spray of 2 lb. D.D.T. active per acre gave no protection.

5. Pasture Agronomy

232. *Stylosanthes gracilis* and *Phaseolus atropurpureus* were outstanding in the third year of the trial comparing various pasture legumes in combination with Panicum maximum. The swards with these legumes produced more dry matter than a pure Panicum sward with added N. at 160 lb. per acre per annum.

233. In the trial to test different initial and annual rates of single superphosphate application to a grass/legume sward, no significant effects were produced by the annual doses of 0 to 3 cwt. in this second year of the trial. Legume establishment in this trial has been slow, particularly where grass growth in the early stages was encouraged by the initial dressing phosphate, and it may be that this has served to ask what response would be expected from the results of previous trials.

234. The large scale grass/legume fertiliser trial was test cropped for the first year. The blocks were split with one half of each cropped with cotton and the other with sorghum followed by bulrush millet. This test cropping proved a very interesting exercise with large differences in growth and yields after the various treatments in the ley phase. In both the sorghum and cotton crops, early growth was very poor where nitrogen, either from the bag or in the form of a pasture legume, had been good supply in the ley. This was generally reflected in yields as well as early growth. But where single superphosphate had been applied to the ley as well as nitrogen, crop growth was normal. This appeared to indicate that with abundant nitrogen in the ley sward, growth had been sufficiently vigorous to exhaust partly or immobilise supplies of P and/or S, and that this imbalance was then reflected in the growth of arable crops. Soil analysis partly confirmed this supposition, and while there are a number of points which require further investigation, it seems clear that with ley production at such a high level as it was in this experiment, it is important to consider the overall balance of nutrients. These results may also offer mechanism of "the Stylosanthes effect" which has been reported previously.

235. At Kawanda, existing experiments on short grasses and elephant grass was cut or grazed to schedule and routine sampling in the identical twins experiment was conducted in July. Test cropping of the elephant grass variety

trials planted in 1959 was completed, and an elephant grass variety trial at Nakabango was terminated. Among new trials planted were: elephant grass/legume/fertiliser trial, elephant grass *vs.* short grass trials, short grass grazing trials (Ssenge), and legume seed-multiplication trial. A legume cover crop trial under coffee was planted at Kituza. New grass introductions were received and planted and seeds exchanged with other countries. Legume seeds, especially *Desmodium intortum,* were multiplied and distribution begun. Grass seeds were sold and planting advice given to farmers. Observations were carried out on weeds and the stunting diseases of elephant grass, and on the suitability of various pasture species for planting in swamps.

236. Routine identification of plant specimens submitted to the herbarium was carried out.

237. Germination tests were carried out on cotton seed prior to distribution.

238. Further attention was given to revision of the text of "Agriculture in Uganda".

239. A start was made on organising seed multiplication of improved crop varieties in collaboration with Prison Farms.

6. Livestock

240. Work on breeding, management and feeding of the small East African Zebu breed in a tick environment continued. This project is of direct application to the farmer at the present time, and an increased number of improved bulls were available for distribution to co-operating centres and progressive farmers during the year. At the same time, a start was made on evaluating three types of *Bos taurus cattle,* Aberdeen Angus, Boran and Hereford, for crossing with local Zebu in a tick-free environment. This trial is being carried out at Arapai Agricultural College, Ngetta Experimental Station and Kigumba Farm. It is designed to find out which of the three "exotic" breeds is most suitable for improving the growth and beef production of the Zebu, so that as tick eradication proceeds, objective advice will be available to farmers for their upgrading programmes.

241. Good growth rates of improved local Zebu cattle were again evident on Serere with heifers averaging 573 lb. at three years and steers 667 lb. Three sons of the outstanding Serere bull, Omorowici, reached 858 lb., 861 lb. and 878 lb. at three years old on a relatively poor all grass diet.

242. Mortality of pure Boran cattle in a tick environment continued to average 80 per cent, due to susceptibility to tick-borne diseases. There was some indication that dilution with local Zebu blood by cross-breeding may introduce tolerance to the tick-borne diseases while retaining the superior growth rate of the Boran. A half-bred Boran bull, when mated to Zebu cows produced good progeny with a high "liveability".

243. In the cross-breeding experiment with "exotic" beef breeds under tick-free conditions at Arapai, Ngetta and Kigumba, the first bulls were introduced towards the end of the year and the first calves will be born in July, 1966.

244. The Boer goats finally arrived during the year and the cross-breeding programme with local and Mubende types was started.

245. Grazing trials in progress totalled fifty acres. Both at Serere and Ngetta there were further indications that the application of single superphosphate to mixed grass/legume swards increases animal production. In the third year of the stocking rate trial the necessity for high stocking rates in order to maximise production per acre was again demonstrated. At a rate of one steer (average wt. 630 lb.) per $\frac{1}{2}$ acre, live-weight gain per acre was 400 lb., but at one beast to $1\frac{1}{2}$ acres this dropped to 150 lb. As the ley came to the end of its third year, it was apparent that fixed heavy stocking was deleterious to the sward, with a marked increase in the unpalatable weed Sporobolus pyramidalis. Reduction of grazing pressure, in the dry season and early wet season in the variable stocking rate treatment, obviated this effect while still giving good production per acre, and would be worth considering if the ley were to be used for more than three years.

246. The continuous grazing treatment which is contrasted with two rotational systems in a trial at Serere gave an apparently higher production per acre than the other treatments, although the differences were not statistically significant with the high variability of the bought-in stock used. Over 588 days the mean L.W.G. per acre with continuous grazing was 661 lb., with a three paddock system 603 lb. and with six paddocks 553 lb.

247. In studies on relative palatability of pasture species, it appeared that this varies both with species and season. Previous indications that grasses in general were preferred when young, and legumes were not normally eaten in quantity until more mature, were confirmed. Using animals with oesophageal fustulæ on a Hyparrhenia/Stylosanthes sward, it was estimated that, over a six-week period, the intake of Stylosanthes was 30 per cent of the total on a dry matter basis. However, it was noticeable that intake of this legume was markedly less each time the animals moved to a fresh pasture, and then gradually built up.

7. Staff

Many expatriate officers are, or are in the process of, leaving the country. These officers are being replaced by Ugandan officers. The rapid turnover of staff does present many problems but these are gradually being overcome. Many Ugandan officers have also left the country temporarily, on Overseas Study Courses. Staff housing and transport have caused difficulties during the year.

8. Acknowledgements

It is with pleasure I convey my gratitude and appreciation to the Staff of the Agriculture Department. They have worked extremely hard in trying to improve the standard of Agriculture. I should also like to extend my thanks and appreciation for all assistance received from foreign agencies and Governments, it is appreciated.

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APPENDICES

UGANDA RAINFALL : 1965

Station		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL	
ABI	Total: mm ..	0·0	9·9	60·5	70·4	97·0	34·8	134·8	126·4	89·6	261·8	173·9	34·8	1,093·9	Met. No. 86 3002
West Nile ..	Days ..	—	4	10	8	10	6	8	13	11	19	14	2	105	
3°05′ N.; 30°55′ E	Mean: mm. ..	18·5	28·6	88·3	129·8	137·8	124·0	134·5	214·5	177·4	193·4	126·4	40·8	1,414·0	
GULU	Total: mm. ..	0·6	6·3	118·3	126·0	152·5	206·4	232·6	142·9	99·0	201·5	138·8	61·0	1,483·2	Met. No. 87 3200
Acholi	Days ..	—	1	7	15	10	10	11	11	15	21	17	9	127	
2°45′ N.; 32°20′ E.	Mean: mm. ..	13·2	42·6	89·6	174·9	198·2	151·2	166·4	229·5	177·4	165·8	98·3	47·4	1,554·5	
LIRA (NGETTA) ..	Total: mm. ..	0·0	6·8	100·9	164·9	156·2	45·5	88·1	148·8	123·3	303·7	164·3	71·4	1,373·9	Met. No. 87 3202
Lango	Days ..	—	2	8	13	14	8	13	8	12	22	15	9	125	
2°17′ N.; 32°56′ E.	Mean: mm. ..	29·1	34·5	88·5	175·0	192·2	125·7	126·7	219·0	171·0	145·5	86·1	45·0	1,438·3	
MOROTO	Total: mm. ..	32·6	3·8	57·1	152·6	43·9	10·5	52·2	22·9	24·4	81·0	71·0	22·0	574·0	Met. No. 88 3400
Karamoja ..	Days ..	2	2	7	9	6	3	4	3	3	7	4	3	53	
2°33′ N.; 34°36′ E.	Mean: mm. ..	9·6	30·1	73·5	125·0	143·9	85·5	135·6	103·7	51·0	47·5	53·4	26·7	885·5	
SOROTI	Total: mm. ..	0·8	30·0	135·4	116·1	155·8	85·1	89·2	112·4	49·4	242·7	121·0	88·4	1,226·3	Met. No. 88 3304
Teso	Days ..	—	3	10	14	17	8	9	12	10	21	13	7	124	
1°31′ N.; 34°11′ E.	Mean: mm. ..	22·7	56·1	99·5	207·2	193·3	104·5	115·6	166·3	141·0	120·0	99·3	53·0	1,378·5	
MBALE	Total: mm. ..	3·3	3·3	36·6	63·5	121·6	66·5	76·9	94·6	28·5	182·0	98·7	74·6	950·1	Met. No. 88 3402
Mbale	Days ..	2	1	4	1	15	11	12	13	8	20	14	10	127	
1°06′ N.; 34°10′ E.	Mean: mm. ..	25·6	50·3	94·5	165·0	167·2	122·0	115·2	133·6	108·4	86·3	64·8	44·8	1,178·6	
TORORO	Total: mm. ..	6·8	19·5	97·7	186·3	141·2	71·6	133·9	49·0	184·5	137·8	171·0	93·6	1,302·9	Met No. 89 3419
Bukedi	Days ..	—	1	11	16	16	9	10	8	11	17	20	9	132	
0°42′ N.; 34°10′ E.	Mean: mm. ..	49·0	71·3	136·0	227·0	222·8	105·0	99·6	116·3	108·8	120·7	104·0	81·2	1,442·6	
JINJA	Total: mm. ..	4·0	30·6	54·6	116·8	15·1	13·3	55·1	27·0	121·7	197·4	153·3	151·4	1,000·3	Met. No. 89 3343
Busoga	Days ..	1	—	10	12	3	4	6	6	9	16	17	13	105	
0°28′ N.; 33°11′ E.	Mean: mm. ..	72·8	74·2	119·1	193·4	127·1	53·1	65·3	77·9	93·3	162·2	157·7	102·6	1,299·3	
KABALE	Total: mm. ..	27·4	94·9	148·9	142·3	61·1	9·6	0·0	43·1	87·6	113·7	83·6	84·4	896·6	Met. No. 91 2900
Kigezi	Days ..	6	8	14	17	8	1	—	4	10	16	16	13	113	
1°15′ S.; 29°59′ E.	Mean: mm. ..	61·7	90·5	113·7	137·7	92·1	26·4	19·8	54·0	94·9	97·4	108·4	92·5	989·1	

UGANDA RAINFALL : 1965—*continued.*

Station		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
Mbarara	Total: mm. ..	55·1	57·4	91·6	120·6	51·7	2·8	0·7	16·6	80·4	97·6	130·2	75·0	779·7	Met. No. 90 300
Ankole ..	Days ..	2	6	8	17	6	1	—	3	13	14	19	7	96	
0° 37′ S. 30° 39′ E.	Mean: mm. ..	44·5	62·1	96·4	124·8	81·5	24·3	20·7	61·9	96·0	104·9	115·5	77·4	910·9	
Fort Portal ..	Total ..	32·1	18·6	235·0	174·5	120·4	68·0	14·0	126·6	159·8	207·0	191·3	52·7	1,400·0	Met. No. 89 3002
Toro	Days ..	6	5	18	20	9	8	5	11	20	24	25	12	163	
0° 40′ N.; 30° 17′ E.	Mean: mm. ..	34·9	72·1	138·6	187·3	143·1	80·8	59·0	116·8	188·5	217·5	166·1	80·6	1,483·3	
Bulindi	Total: mm. ..	13·7	18·5	75·0	105·0	76·0	62·3	74·5	81·3	93·6	307·5	198·8	57·2	1,163·4	Met. No. 88 3106
Bunyoro ..	Days ..	2	3	12	10	8	12	4	12	12	23	18	7	123	
1° 28′ N.; 31° 28′ E.	Mean: mm. ..	35·5	57·9	108·3	176·5	127·6	85·7	87·8	155·5	161·7	149·5	115·2	60·1	1,321·3	
Masaka	Total: mm. ..	5·8	90·9	71·1	147·7	83·9	8·9	25·7	42·0	53·2	93·5	66·3	163·1	852·1	Met. No. 90 3104
Masaka	Days ..	1	8	10	10	10	3	3	5	6	13	14	16	99	
0° 21′ S.; 31° 44′ E.	Mean: mm. ..	51·9	62·4	113·9	179·9	167·3	46·5	35·2	52·5	88·2	101·8	88·5	90·7	1,088·8	
Kakumiro ..	Total: mm. ..	58·9	18·5	146·0	146·4	109·4	8·4	2·8	151·3	78·3	229·2	168·5	24·6	1,142·3	Met. No. 89 3101
Mubende ..	Days ..	1	4	11	17	5	1	1	9	11	20	17	4	101	
0° 46′ N.; 31° 19′ E.	Mean: mm. ..	36·8	56·2	110·1	166·6	104·3	62·3	70·3	130·7	161·0	184·2	142·5	69·8	1,294·8	
Senda	Total: mm. ..	3·3	58·7	119·1	166·2	88·7	13·0	38·3	118·8	144·2	131·3	242·3	105·7	1,226·6	Met. No. 89 3262
Mengo	Days ..	1	4	8	10	5	3	4	10	11	14	23	9	102	
0° 29′ N.; 32° 01′ E.	Mean: mm. ..	48·7	66·0	119·5	167·5	116·9	52·5	47·4	102·5	111·8	144·5	126·0	80·2	1,183·5	
Kampala	Total: mm. ..	14·5	73·1	214·9	159·2	50·3	9·6	51·9	14·4	124·0	155·0	139·4	124·9	1,191·2	Met. No. 89 3251
Mengo	Days ..	2	4	8	13	5	3	7	7	15	19	16	14	113	
0° 19′ N.; 32° 33′ E.	Mean: mm. ..	59·9	57·6	116·4	171·6	137·0	59·1	52·8	106·3	102·7	112·7	135·6	96·8	1,208·5	
Entebbe	Total: mm. ..	12·1	75·5	110·0	153·5	183·9	67·1	164·4	58·8	130·2	205·7	150·1	97·0	1,408·3	Met. No. 89 3266
Mengo	Days ..	1	8	14	16	13	3	8	5	10	15	16	11	120	
0° 03′ N.; 32° 27′ E.	Mean: mm ..	95·8	95·7	162·2	283·0	265·6	92·6	66·8	84·8	85·4	111·7	155·6	126·1	1,625·3	

Region and Zone	Acreages*		Sales (Tons of Seed Cotton)		Harvested Yield per Acre (lb. Seed Cotton)		Production (Bales of Lint)	
	Total 1964/65	Mean 1959/60–1963/64	Total 1964/65	Mean 1959/60–1963/64	Averages 1964/65	Mean 1959/60–1963/64	Total§ 1964/65	Mean 1959/60–1963/64
Buganda—								
Mengo	189,000	212,000	30,726	29,115	364	310	54,067	50,434
Masaka	23,000	30,000	2,450	2,198	242	167	4,159	3,943
Mubende	81,000	72,000	7,596	7,607	210	238	13,629	13,136
Total	293,000	314,000	40,772	38,919	312	265	71,855	67,513
Western—								
Bunyoro	74,000	55,000	7,263	5,402	219	216	13,142	9,264
Kazinga Channel	20,000	27,000	4,030	3,983	444	336	7,122	6,969
Total	94,000	82,000	11,294	9,384	268	254	20,264	16,233
Eastern—								
Busoga	501,000	442,000	52,870	49,357	236	250	96,545	87,183
Mbale	415,000	317,000	40,162	29,003	217	205	69,107	49,684
Teso	292,000	169,000	26,135	11,758	200	145	45,385	20,133
South Teso Segregated	39,000	33,000	5,929	3,631	340	248	10,107	6,027
Usuku	28,000	19,000	2,676	1,871	215	216	4,459	3,125
Total	1,275,000†	981,000	127,772‡	95,618	224	222	225,603	166,150
Northern—								
Lango	209,000	193,000	34,151	21,543	366	251	57,470	35,847
East Acholi	79,000	81,000	10,034	7,893	285	216	16,616	13,081
West Acholi	64,000	64,000	8,421	7,768	295	267	13,837	12,613
West Nile	124,000	78,000	16,464	10,235	297	299	32,156	18,762
Total	476,000†	415,000	69,070‡	47,441	325	254	120,079	80,306
UGANDA TOTAL	2,138,000	1,794,000	248,906	191,362	261	238	437,801	330,205

* To the nearest thousand acres.

† These figures do not agree with the Regional totals shown in Appendices III (*a*), III (*c*) and III (*e*) due to the fact that the boundaries of the zones listed under Eastern and Northern Regions do not coincide with the Regional boundaries. The differences are compensating and the Uganda total agrees with that in Table III (*a*).

‡ Similarly, these figures do not agree with the Regional totals in Table IV.

§ Excluding 130 bales from Research Stations.

Monthly Plantings—Acres

Region and Zone	March	April	May	June	July	August	September	October	Total
Buganda—									
Mengo	—	497	4,252	14,342	78,273	59,715	27,710	—	184,789
Masaka	—	—	1,793	2,706	2,582	8,969	8,451	—	24,501
Mubende*	—	—	2,217	23,182	13,045	14,255	1,873	—	54,572
Total ..	—	497	8,262	40,230	93,900	82,939	38,034	—	263,862
Western—									
Bunyoro†	—	—	1,500	7,070	44,940	22,559	—	—	76,069
Kazinga Channel ..	—	—	100	135	1,560	8,448	5,368	—	15,611
Total ..	—	—	1,600	7,205	46,500	31,007	5,368	—	91,680
Eastern—									
Busoga	—	18,656	143,358	132,513	188,327	87,799	7,726	—	578,379
Mbale	—	5,556	65,426	116,888	191,071	108,564	9,804	3	497,312
Teso	—	21,250	95,735	36,623	52,419	30,499	—	—	236,526
South Teso Segregated ..	—	5,011	14,735	7,364	4,277	5,332	—	—	36,719
Usuku	—	9,114	15,576	976	1,667	29	—	—	27,362
Total ..	—	59,587	334,830	294,364	437,701	232,223	17,530	3	1,376,298‡
Northern—									
Lango	—	2,562	35,693	84,296	69,379	18,124	—	—	210,054
East Acholi	136	1,348	13,987	25,918	32,137	23,991	2,189	—	99,706
West Acholi	212	4,140	9,330	28,659	28,359	10,536	1,074	—	82,310
West Nile	—	181	9,603	27,727	45,355	39,114	14,771	1,803	138,554
Total ..	348	8,231	68,613	166,600	175,230	91,765	18,034	1,803	530,624‡
UGANDA TOTAL ..	348	68,315	413,305	508,399	753,391	437,934	78,966	1,806	2,262,464

* Does not include Buyaga and Bugangazi counties.

† Includes Buyaga and Bugangazi counties.

‡ These figures do not agree with those in Tables III (*c*) and III (*e*) due to the fact that the boundaries of the zones listed under Eastern and Northern Regions do not coincide with Regional boundaries. The differences are compensating. The national total agrees with that shown in Table III (*a*).

COTTON: MONTHLY PLANTINGS AS PERCENTAGES OF TOTAL

APPENDIX II (*c*)

Region and Zone	April		May		June		July		August		September	
	1965/66	Mean 1960/61–1964/65	1965/66	Mean 1960/61–1964/65	1966/66	Mean 1960/61–1964/65	1965/66	Mean 1960/61–1964/65	1965/66	Mean 1960/61–1964/65	1965/66	Mean 1960/61–1964/65
Buganda—												
Mengo	0·3	—	2·3	4·5	7·8	32·4	42·3	35·8	32·3	24·0	15·0	3·3
Masaka	—	—	7·3	7·6	11·1	15·5	10·5	24·4	36·6	33·0	34·5	19·5
Mubende*	—	—	4·1	2·2	42·5	19·8	23·9	37·1	26·1	34·1	3·4	6·8
Total	0·2	—	3·1	4·2	15·3	27·8	35·6	35·0	31·4	27·3	14·4	5·7
Western—												
Bunyoro*	—	—	2·0	2·5	9·3	19·2	59·1	46·3	29·6	29·7	—	2·2
Kazinga Channel*	—	—	0·6	—	0·9	—	10·0	6·2	54·1	43·3	34·4	50·5
Total	—	—	1·7	1·8	7·9	13·7	50·7	34·7	33·8	33·6	5·9	16·2
Eastern—												
Busoga	3·2	1·4	24·8	18·1	22·9	32·2	32·6	29·9	15·2	17·1	1·3	1·3
Mbale*	1·1	1·8	13·2	15·3	23·5	31·4	38·4	30·8	21·8	18·6	2·0	2·1
Teso*	9·0	9·2	40·5	32·4	15·5	30·8	22·1	19·7	12·9	7·9	—	—
South Teso Segregated	13·6	6·7	40·1	32·3	20·1	32·6	11·7	16·6	14·5	11·8	—	—
Usuku	33·3	11·8	56·8	45·1	3·7	32·5	6·1	10·2	0·1	0·4	—	—
Total	4·3	3·4	24·3	21·0	21·4	31·3	31·8	27·4	16·9	15·3	1·3	1·2
Northern—												
Lango*	1·2	0·8	17·0	11·8	40·1	41·5	33·0	32·3	8·7	12·6	—	1·0
East Acholi	1·5†	2·6	14·0	14·3	26·0	30·9	32·2	35·2	24·1	15·1	2·2	1·9
West Acholi*	5·3†	0·3	11·3	6·0	34·8	32·7	34·5	42·1	12·8	17·5	1·3	1·4
West Nile	0·2	0·1	6·9	1·5	20·0	26·4	32·7	43·1	28·2	24·8	12·0‡	4·1
Total	1·7	0·9	12·9	9·3	31·4	34·9	33·0	36·6	17·3	16·4	3·7	1·9
UGANDA TOTAL	3·0	2·1	18·2	14·7	22·5	31·0	33·3	31·1	19·4	18·3	3·6	2·8

* Due to the alteration in the zonal boundaries the percentages for these zones are not strictly comparable with the means.
† Includes March planting.
‡ Includes October planting.

COTTON PRODUCTION

Number of Bales of 400 lb., 1907–1965

(Note : All figures are corrected to 1,000 bales)

Season	Bales (Actual)	Bales (5-year average)	Season	Bales (Actual)	Bales (5-year average)
1907	2,000	—	1936/37 ..	332,000	325,000
1908	4,000	—	1937/38 ..	418,000	335,000
1909	5,000	9,000	1938/39 ..	307,000	344,000
1910	12,000	13,000	1939/40 ..	300,000	326,000
1911	20,000	21,000	1940/41 ..	365,000	264,000
1912/13 ..	26,000	25,000	1941/42 ..	238,000	241,000
1913/14 ..	40,000	27,000	1942/43 ..	112,000	236,000
1914/15 ..	26,000	28,000	1943/44 ..	191,000	208,000
1915/16 ..	22,000	29,000	1944/45 ..	272,000	207,000
1916/17 ..	28,000	26,000	1945/46 ..	227,000	218,000
1917/18 ..	27,000	30,000	1946/47 ..	231,000	258,000
1918/19 ..	36,000	44,000	1947/48 ..	170,000	272,000
1919/20 ..	47,000	48,000	1948/49 ..	391,000	295,000
1920/21 ..	81,000	60,000	1949/50 ..	339,000	325,000
1921/22 ..	48,000	78,000	1950/51 ..	346,000	355,000
1922/23 ..	88,000	128,000	1951/52 ..	380,000	357,000
1923/24 ..	128,000	128,000	1952/53 ..	320,000	349,000
1924/25 ..	196,000	145,000	1953/54 ..	398,000	352,000
1925/26 ..	180,000	155,000	1954/55 ..	300,000	351,000
1926/27 ..	134,000	170,000	1955/56 ..	364,000	357,000
1927/28 ..	138,000	156,000	1956/57 ..	372,000	358,000
1928/29 ..	204,000	157,000	1957/58 ..	351,000	370,000
1929/30 ..	125,000	173,000	1958/59 ..	401,000	371,000
1930/31 ..	189,000	204,000	1959/60 ..	360,000	333,000
1931/32 ..	207,000	220,000	1960/61 ..	370,000	334,000
1932/33 ..	295,000	246,000	1961/62 ..	181,000	330,000
1933/34 ..	286,000	271,000	1962/63 ..	359,000	345,000
1934/35 ..	253,000	296,000	1963/64 ..	379,000	—
1935/36 ..	316,000	321,000	1964/65 ..	438,000	—

ESTIMATED ACREAGE UNDER CROPS, 1964 AND 1965—AFRICAN CULTIVATION

(*Thousand Acres*)

Crop	Buganda		Eastern		Western		Northern		Total	
	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965
Beans (Mixed and Cowpeas) ..	160·0	228·0	231·4	293·6	100·5	158·2	274·5	237·4	766·6	917·2
Beans (Soya)	2·5	0·6	—	—	—	0·2	—	—	2·5	0·8
Cassava	64·9	115·1	273·9	480·9	165·0	170·8	642·6	349·8	1,146·5	1,116·6
Cocoa	0·6	1·0	*	0·1	0·2	0·2	—	—	0·8	1·3
Coffee (Arabica)	1·6	1·0	24·5	24·4	16·1	17·7	2·4	2·4	44·6	45·5
Coffee (Robusta)	572·5	619·3	10·0	47·7	16·4	19·6	0·4	0·1	599·3	686·7
Cotton	292·7	263·9	1,277·9	1,374·6	94·5	92·7	473·0	529·1	2,138·1	2,260·3
Grams	1·3	0·1	7·5	9·2	—	—	1·2	—	10·0	9·3
Groundnuts	146·8	88·5	295·3	229·9	38·6	44·5	136·8	219·2	617·5	582·1
Maize	178·2	235·7	204·4	248·3	75·2	102·9	79·7	106·2	537·5	693·1
Millet (Sorghum)	79·1	26·5	306·5	316·2	202·5	146·1	201·3	266·0	789·4	754·8
Millet (Finger)	30·5	39·3	831·0	860·4	101·6	97·0	344·4	408·3	1,307·5	1,405·0
Millet (Bulrush)	—	—	2·6	2·2	—	—	—	0·2	2·6	2·4
Onions	—	0·4	—	—	2·1	2·9	—	—	2·1	3·3
Peas (Pigeon)	—	—	3·2	4·1	—	—	219·0	214·6	222·2	218·7
Peas (Field)	—	3·0	—	—	37·1	43·3	—	—	37·1	46·3
Plantains	616·3	652·3	580·7	442·9	748·9	260·5	70·6	26·3	2,016·5	1,382·0
Potatoes (Sweet)	133·5	124·1	261·1	399·4	164·9	202·4	130·8	145·0	690·3	870·9
Potatoes (Solanum)	—	2·6	—	—	10·9	15·0	—	—	10·9	17·6
Rice	—	—	1·8	3·3	0·7	*	2·4	5·4	4·9	8·7
Sim-sim	10·7	14·6	12·8	19·1	2·6	2·1	242·5	198·1	268·8	233·9
Tobacco (Fire-cured)	0·2	0·2	—	—	7·4	7·1	1·5	4·1	9·1	11·4
Tobacco (Flue-cured)	—	—	—	—	0·6	0·6	2·6	2·4	3·2	3·0
Tea	0·3	0·5	—	—	2·3	3·6	—	—	2·6	4·1
Wheat	—	—	—	0·3	—	2·4	—	—	—	2·7
Sugar	—	0·5	—	1·1	—	6·7	—	11·1	—	19·4
Total ..	2,291·9	2,417·2	4,324·6	4,757·7	1,788·4	1,396·5	2,825·7	2,725·7	11,230·6	11,297·1

All figures corrected to nearest 100 acres.

* Under 50 acres.

ESTIMATED ACREAGE UNDER CROPS, 1964 AND 1965—AFRICAN CULTIVATION

(*Thousand Acres*)

Crop	Mengo		Masaka		Mubende		Total	
	1964	1965	1964	1965	1964	1965	1964	1965
Beans (Mixed and Cowpeas)	101·9	119·6	40·4	63·0	17·9	45·4	160·2	228·0
Beans (Soya)	1·6	0·6	0·9	—	—	—	2·5	0·6
Cassava	51·5	72·9	8·0	15·5	5·4	26·7	64·9	115·1
Cocoa	0·6	1·0	*	*	—	—	0·6	1·0
Coffee (Arabica)	0·6	—	1·0	1·0	—	—	1·6	1·0
Coffee (Robusta)	372·5	325·4	171·1	183·9	28·9	110·0	572·5	619·3
Cotton	252·0	179·4	22·7	24·5	18·0	60·0	292·7	263·9
Grams	1·3	0·1	—	—	—	—	1·3	0·1
Groundnuts	96·8	40·0	30·5	17·0	19·5	31·5	146·8	88·5
Maize	106·0	118·7	64·6	52·0	7·6	65·0	178·2	235·7
Millet (Sorghum)	42·8	3·6	25·0	12·3	11·3	10·6	79·1	26·5
Millet (Finger)	23·7	30·7	1·1	1·2	5·7	7·4	30·5	39·3
Millet (Bulrush)	—	—	—	—	—	—	—	—
Onions	—	—	—	0·1	—	0·3	—	0·4
Peas (Pigeon)	—	—	—	—	—	—	—	—
Peas (Field)	—	*	—	3·0	—	—	—	3·0
Plantains	350·5	344·0	236·7	200·7	29·1	107·6	616·3	652·3
Potatoes (Sweet)	93·9	89·7	23·3	14·0	16·3	20·4	133·5	124·1
Potatoes (Solanum)	—	1·0	—	—	—	1·6	—	2·6
Rice	—	—	—	—	—	—	—	—
Sim-sim	10·7	6·2	—	—	—	8·4	10·7	14·6
Tobacco (Fire-cured)	—	—	—	—	0·2	0·2	0·2	0·2
Tobacco (Flue-cured)	—	—	—	—	—	—	—	—
Tea	0·3	*	*	0·1	*	0·4	0·3	0·5
Wheat	—	—	—	—	—	—	—	—
Sugar-cane	—	0·5	—	—	—	—	—	0·5
Total	1,506·7	1,333·4	625·3	588·3	159·9	495·5	2,291·9	2,417·2

* Under 50 acres.

All figures corrected to the nearest 100 acres.

Note.—(1) Excludes Mityana Division.

(2) Includes Buyaga and Bugangazi counties.

(3) In 1965 in Mubende Division, Buyaga and Bugangazi counties were transferred to Bunyoro, and Mityana Division included.

ESTIMATED ACREAGE UNDER CROPS, 1964 AND 1965— AFRICAN CULTIVATION

EASTERN REGION

(*Thousand Acre*)*s*

Crop	Busoga		Bukedi		Bugisu and Sebei		Teso		Karamoja		Total	
	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965
Beans (Mixed and Cowpeas) ..	43·2	49·2	32·6	65·4	55·0	74·8	100·2	103·8	0·4	0·4	231·4	293·6
Beans (Soya)	—	—	—	—	—	—	—	—	—	—	—	—
Cassava	43·9	117·8	65·4	104·0	29·3	29·1	135·3	229·6	—	0·4	273·9	480·9
Cocoa	*	0·1	—	—	—	—	—	—	—	—	*	0·1
Coffee (Arabica)	—	—	—	—	24·5	24·4	—	—	—	—	24·5	24·4
Coffee (Robusta)	10·0	46·7	*	1·0	—	—	—	—	—	—	10·0	47·7
Cotton	501·4	578·4	337·0	352·8	77·4	142·9	359·2	298·5	2·9	2·0	1,277·9	1,374·6
Grams	—	—	—	—	—	—	7·5	9·2	—	—	7·5	9·2
Groundnuts	132·9	80·9	57·5	43·9	8·0	9·3	95·7	94·3	1·2	1·5	295·5	229·9
Maize	74·8	131·2	34·1	39·2	82·4	62·0	8·2	10·8	4·9	5·1	204·4	248·3
Millet (Sorghum)	4·9	1·9	29·3	33·7	18·6	15·7	146·7	157·9	106·0	107·0	308·5	316·2
Millet (Finger)	156·4	167·6	234·9	290·4	75·9	60·2	361·8	340·1	2·0	2·1	831·0	860·4
Millet (Bulrush)	—	—	—	—	—	—	—	—	2·6	2·2	2·6	2·2
Onions	—	—	—	—	—	—	—	—	—	—	—	—
Peas (Pigeon)	—	—	—	—	—	—	2·9	4·1	0·3	—	3·2	4·1
Peas (Field)	—	—	—	—	—	—	—	—	—	—	—	—
Plantains	223·6	207·9	36·7	120·8	318·0	107·2	2·3	7·0	0·1	—	580·7	442·9
Potatoes (Sweet)	63·5	197·0	49·0	56·0	37·9	49·2	110·0	96·5	0·7	0·7	261·1	399·4
Potatoes (Solanum)	—	—	—	—	—	—	—	—	—	—	—	—
Rice	—	0·5	1·3	1·9	—	0·1	0·5	0·8	—	—	1·8	3·3
Sim-sim	3·0	2·2	1·5	3·7	—	0·1	8·2	10·9	0·2	2·2	12·8	19·1
Tobacco (Fire-cured)	—	—	—	—	—	—	—	—	—	—	—	—
Tobacco (Flue-cured)	—	—	—	—	—	—	—	—	—	—	—	—
Tea	—	—	—	—	—	—	—	—	—	—	—	—
Wheat	—	—	—	—	—	0·3	—	—	—	—	—	0·3
Sugar-cane	—	1·0	—	—	—	—	—	0·1	—	—	—	1·1
Total ..	1,257·6	1,582·4	879·3	1,112·8	727·0	575·3	1,339·4	1,363·6	121·3	123·6	4,324·6	4,757·7

* Under 50 acres.

All figures corrected to nearest 100 acres.

ESTIMATED ACREAGES UNDER CROPS, 1964 AND 1965— AFRICAN CULTIVATION

WESTERN REGION

(*Thousand Acres*)

Crop	Ankole		Bunyoro		Kigezi		‡ Toro		Total	
	1964	1965	1964	1965	1964	1965	1964	1965	1964	1965
Beans (Mixed and Cowpeas)	23·6	29·2	18·7	19·5	46·9	99·4	11·3	10·1	100·5	158·2
Beans (Soya)	—	—	—	—	—	—	—	0·2	—	0·2
Cassava	11·7	26·7	29·4	38·1	3·8	0·8	120·1 †	105·2	165·0	170·8
Cocoa	—	—	0·1	0·1	—	—	0·1	0·1	0·2	0·2
Coffee (Arabica)	5·6	5·1	0·4	0·9	4·4	5·8	5·7	5·9	16·1	17·7
Coffee (Robusta)	7·5	8·5	2·1	3·9	1·4	1·5	5·4	5·7	16·4	19·6
Cotton	1·3	3·2	74·2	77·1	0·2	0·5	18·8	11·9	94·5	92·7
Grams	—	—	—	—	—	—	—	—	—	—
Groundnuts	15·6	20·2	7·4	10·3	8·9	4·5	6·7	9·5	38·6	44·5
Maize	5·6	6·8	13·9	17·9	26·1	53·4	29·6	24·8	75·2	102·9
Millet (Sorghum)	14·8	17·2	4·3	5·3	178·1	112·8	5·3	10·8	202·5	146·1
Millet (Finger)	35·1	43·2	13·2	16·7	36·6	19·4	16·7	17·7	101·6	97·0
Millet (Bulrush)	—	—	—	—	—	—	—	—	—	—
Onions	0·6	0·8	0·2	1·1	0·3	0·3	1·0	0·7	2·1	2·9
Peas (Pigeon)	—	—	—	0·3	—	—	0·1	*	0·1	0·3
Peas (Field)	6·8	4·9	0·2	—	29·5	38·0	0·6	0·1	37·1	43·0
Plantains	391·8	131·0	119·7 †	45·0	123·6	130·5	113·8	54·0	748·9	260·5
Potatoes (Sweet)	29·2	36·7	16·4	26·1	79·2	117·7	40·1	21·9	164·9	202·4
Potatoes (Solanum)	4·8	1·2	0·8	0·9	5·0	12·5	0·3	0·4	10·9	15·0
Rice	—	—	—	—	—	—	0·7	*	0·7	*
Sim-sim	—	*	2·8	2·1	—	—	—	*	2·8	2·1
Tobacco (Fire-cured)	—	—	6·7	6·7	0·7	—	—	0·4	7·4	7·1
Tobacco (Flue-cured)	—	—	—	—	0·6	0·6	—	—	0·6	0·6
Tea	0·3	0·8	*	0·1	0·3	0·4	1·7	2·3	2·3	3·6
Wheat	—	—	—	—	—	2·4	—	*	—	2·4
Sugar-cane	—	—	—	*	—	—	—	6·7	—	6·7
Total	554·3	335·5	310·5	272·1	545·6	500·5	378·0	288·4	1,788·4	1,396·5

* Under 50 acres.

All figures corrected to the nearest 100 acres.

Note.† (1) In 1965, Bunyoro gained the counties of Buyaga and Bugangazi.

‡ (2) Except for the estimated acreage of plantains, 1964 and 1965 figures for Toro exclude the counties of Bwamba, Busongora and Bukonjo, where disturbances prevented any estimations being made.

ESTIMATED ACREAGE UNDER CROPS, 1964 AND 1965— AFRICAN CULTIVATION

NORTHERN REGION

(*Thousand Acres*)

Crop	Lango		Acholi		West Nile/Madi		Total	
	1964	1965	1964	1965	1964	1965	1964	1965
Beans (Mixed and Cowpeas)	159·3	95·3	64·9	30·8	50·3	111·3	274·5	237·4
Beans (Soya)	—	—	—	—	—	—	—	—
Cassava	136·5†	130·1	95·7†	117·2	410·4†	102·5	642·6	349·8
Cocoa	—	—	—	—	—	—	—	—
Coffee (Arabica)	—	—	—	—	2·4	2·4	2·4	2·4
Coffee (Robusta)	—	—	—	—	0·4	0·1	0·4	0·1
Cotton	209·1	210·0	140·3	180·6	123·6	138·5	473·0	529·1
Grams	—	—	—	—	1·2	—	1·2	—
Groundnuts	49·1	47·6	65·6	85·6	22·1	86·0	136·8	219·2
Maize	25·5	23·5	16·0	23·9	38·2	58·8	79·7	106·2
Millet (Sorghum)	110·8	149·3	44·3	57·7	46·2	59·0	201·3	266·0
Millet (Finger)	179·2	205·2	104·1	91·9	61·1	111·2	344·4	408·3
Millet (Bulrush)	—	—	—	0·2	—	—	—	0·2
Onions	—	—	—	—	—	—	—	—
Peas (Pigeon)	174·4	176·0	38·0	33·7	6·6	4·9	219·0	214·6
Peas (Field)	—	—	—	—	—	—	—	—
Plantains	14·0†	14·1	7·3	7·1	49·3†	5·1	70·6	26·3
Potatoes (Sweet)	42·5	35·2	56·7	61·6	31·6	48·2	130·8	145·0
Potatoes (Solanum)	—	—	—	—	—	—	—	—
Rice	1·4	3·1	—	—	1·0	2·3	2·4	5·4
Sim-sim	89·1	82·5	99·2	92·7	54·2	22·9	242·5	198·1
Tobacco (Fire-cured)	—	—	—	—	1·5	4·1	1·5	4·1
Tobacco (Flue-cured)	*	*	0·5	0·7	2·1	1·7	2·6	2·4
Tea	—	—	—	—	—	—	—	—
Wheat	—	—	—	—	—	—	—	—
Sugar-cane	—	*	—	—	—	11·1	—	11·1
Total	1,190·9	1,171·9	732·6	783·7	902·2	770·1	2,825·7	2,725·7

* Under 50 acres.

† Revised.

All figures corrected to the nearest 100 acres.

QUANTITIES MARKETED AND
(Values Based on Prices

Region/District	Robusta Coffee†		Arabica Coffee†		All Coffee	Seed (1964/
	Quantity Clean Equivalent	Value	Quantity Clean Equivalent	Value	Value	Quantit
	Tons	£	*Tons*	£	£	*Tons*
Eastern—						
Busoga	1,621	152,926	—	—	152,925	52,87
Bugisu/Sebei	—	—	6,836	1,617,420	1,617,420	6,05
Bukedi	—	—	—	—	—	34,74
Teso	—	—	—	—	—	34,74
Karamoja	—	—	—	—	—	11
Total ..	1,621	152,926	6,836	1,617,420	1,770,346	127,81
Northern—						
Lango	—	—	—	—	—	34,15
Acholi	—	—	—	—	—	18,41
West Nile/Madi	14	1,190	340	74,533	75,723	16,46
Total ..	14	1,190	340	74,533	75,723	69,02
Western—						
Bunyoro	439	39,370	1	198	39,568	7,26
Toro	1,417	102,122	236	26,265	128,387	3,53
Kigezi	1,082	96,933	463	90,760	187,693	2
Ankole	4,163	338,056	1,532	302,824	640,880	46
Total ..	7,101	576,481	2,232	420,047	996,528	11,29
Buganda—						
Mengo	—	—	—	—	—	36,63
Masaka	109,854	11,675,555	2,413	581,524	12,257,079	2,45
Mubende	—	—	—	—	—	1,68
Total ..	109,854	11,675,555	2,413	581,524	12,257,079	40,77
UGANDA TOTAL ..	118,590	12,406,152	11,821	2,693,524	15,099,676	248,90

Note.—Crops included in this table are those for which quantities marketed and values quantities are marketed, but are not included as reliable estimation of Sales and value are not avai

All figures given to nearest long ton.

* Where growers process their own coffee to an intermediate or final form, the value of suc

† Production of coffee formerly shown as estate production is now included in this table.

STIMATED VALUES 1965

*aid to Growers)**

Cotton 5 Season)		Tobacco: Flue-cured (Cured-Leaf)		Tobacco: Flue-cured (Green-Leaf)		Tobacco: Fire-cured (Cured-Leaf)		All Tobacco	Total Value	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Value	1964	1965
	£	*Tons*	£	*Tons*	£	*Tons*	£	£	£	£
	3,152,722	—	—	—	—	—	—	—	2,649,141	3,305,648
	348,858	—	—	—	—	—	—	—	1,541,287	1,966,278
	2,034,348	—	—	—	—	—	—	—	1,551,889	2,034,348
	2,036,081	—	—	—	—	—	—	—	1,812,120	2,036,081
	7,286	—	—	—	—	—	—	—	11,347	7,286
	7,579,295	—	—	—	—	—	—	—	7,565,784	9,349,641
	2,115,742	2	483	—	—	—	—	483	1,692,750	2,116,225
	1,131,374	157	42,130	—	—	—	—	42,130	1,163,991	1,173,504
	1,012,272	855	308,771	—	—	890	94,557	403,328	1,072,367	1,491,323
	4,259,388	1,014	351,384	—	—	890	94,557	445,941	3,929,108	4,781,052
	444,152	—	—	—	—	1,786	170,741	170,741	593,075	654,461
	220,770	—	—	—	—	—	—	—	299,883	349,157
	1,594	—	—	111	2,950	—	—	2,950	188,593	192,237
	22,678	—	—	—	—	—	—	—	458,851	663,558
	689,194	—	—	111	2,950	1,786	170,741	173,691	1,488,402	1,859,413
	2,294,873	—	—	—	—	—	—	—	—	—
	150,501	—	—	—	—	—	—	—	20,493,393	14,808,889
	104,145	—	—	—	—	25	2,231	2,231	—	—
	2,549,579	—	—	—	—	25	2,231	2,231	20,493,393	14,808,889
	15,077,456	1,014	351,384	111	2,950	2,701	267,529	621,863	33,476,587	30,798,995

are known with reasonable accurracy; crops such as maize and groundnuts considerable able.

processesing is included in the price paid.

Article	Units	Quantities			Value in £		
		1963	1964	1965	1963	1964	1965
Oilseed and Products:—							
Castor Seed	*Tons*	2,505	1,967	1,618	103,653	88,471	69,402
Groundnuts	*Tons*	3,500	3,804	316	184,208	223,273	24,595
Sesame Seed	*Tons*	893	917	810	60,738	59,425	56,451
Sunflower Seed	*Tons*	87	108	105	3,658	4,499	4,320
Cotton Seed Cake	*Tons*	67,518	61,834	68,025	1,512,398	1,535,661	1,795,099
Cotton Seed Oil	*Tons*	862	1,560	861	88,354	164,460	118,642
Other Vegetable Oils	*Tons*	9	41	6	1,128	3,545	1,481
Other Oilseed Cake, Meals and other Vegetable Oil residue	*Tons*	1,842	590	2,047	52,637	18,712	45,850
Fibres:—							
Cotton, raw	*Tons*	58,790	63,485	68,002	14,329,593	15,856,857	16,761,627
Sisal	*Tons*	343	274	143	44,229	29,465	10,142
Beverages Crops and Tobacco:—							
Coffee, not roasted	*Tons*	145,219	137,455	155,295	27,181,325	35,378,156	30,421,334
Tea	*Tons*	5,405	5,992	6,667	2,040,672	2,211,596	2,388,418
Unmanufactured Tobacco	*Tons*	4	28	335	1,016	5,352	67,409
Manufactured Tobacco	*Lb.*	—	4,912	—	—	2,255	—
Spices and Drugs:—							
Chillies	*Tons*	426	382	198	51,344	43,595	56,124
Papain	*Tons*	56	190	175	113,563	356,334	262,669
Vanilla	*Tons*	1	2	3	4,444	8,462	7,946
Beans and Pulses:—							
Soya Bean	*Tons*	65	297	78	2,110	8,596	2,559
Others	*Tons*	1,502	771	550	41,940	27,543	22,852
Cereals:—							
Maize (unmilled)	*Tons*	4,154	1,064	1,619	80,680	24,922	42,255
Maize germ meal	*Tons*	4,056	1,860	2,255	68,194	33,162	44,631
Other (unmilled)	*Tons*	—	811	299	—	25,223	10,796
Miscellaneous:—							
Rubber	*Tons*	—	—	—	—	—	—
Ethyl Alcohol	*Imp. Gal.*	4,168	2,775	985	1,426	947	332
Sugar	*Tons*	5,030	3,098	489	291,656	194,414	30,388
	Total £				46,258,966	56,304,925	52,245,322

Source: East African Customs and Excise Annual Trade Reports, 1963, 1964 and 1965.

EXPORTS OF AGRICULTURAL PRODUCE TO KENYA AND TANZANIA, 1965 APPENDIX V (*b*)

Article	Unit	Quantities			Value in £		
		To Kenya	To Tanzania	Total	To Kenya	To Tanzania	Total
Oilseeds and Products:—							
Cotton Seed Cake	*Tons*	699	1	700	12,598	21	12,619
Other Oilseed Cakes, Meals and other Vegetable Oil Residues	*Tons*	283	—	283	8,353	—	8,353
Sesame Seed	*Tons*	7	*	7	518	19	537
Groundnuts	*Tons*	188	224	412	14,266	17,254	31,520
Cotton Seed Oil	*Tons*	7,260	446	7,706	974,303	70,147	1,044,450
Groundnuts Oil	*Tons*	45	15	60	6,143	2,502	8,645
Other Vegetable Oils	*Tons*	15	1	16	2,066	252	2,318
Beverage Crops and Tobacco:—							
Coffee, not roasted	*Tons*	76	—	76	4,562	—	4,562
Tea	*Tons*	121	1	122	33,027	203	33,230
Unmanufactured Tobacco	*Lb.*	4,285,215	1,688,090	5,973,305	808,526	218,512	1,027,038
Cigars, Cheroots and Manufactured Tobacco	*Lb.*	291,282	66,657	357,939	201,874	49,963	251,837
Spices:							
Chillies	*Tons*	14	*	14	2,658	10	2,668
Others	*Tons*	131	45	176	24,420	4,350	28,779
Fibres:—							
Cotton Linters	*Tons*	10	—	10	931	—	931
Cotton waste, not carded or combed	*Tons*	131	64	195	12,945	4,528	17,473
Cereals:—							
Maize (unmilled)	*Tons*	1,933	131	2,064	39,356	2,695	42,051
Millet	*Tons*	1,275	174	1,449	42,037	4,012	46,049
Others	*Tons*	277	—	277	11,038	—	11,038
Brans, Pollards, Sharps and by-products of Cereals, Grains and Leguminous Vegetables:—							
Maize germ meal	*Tons*	840	196	1,036	14,136	3,189	17,325
Others	*Tons*	6,078	—	6,078	86,098	—	86,098
Pulses:—							
Beans, Peas and Lentils	*Tons*	1,990	752	2,742	69,860	27,146	97,006
Miscellaneous:—							
Rubber	*Tons*	2	—	2	125	—	125
Ethyl Alcohol	*Imp. Gal.*	33,942	22,625	56,572	9,229	5,630	14,859
Sugar	*Tons*	18,075	538	18,613	834,431	22,753	857,184
Jaggery	*Tons*	3	*	3	150	19	169
Molasses	*Tons*	85	—	85	327	—	327
	Total £				3,213,986	433,205	3,647,191

Source: East African Customs and Excise Annual Trade Reports, 1965.
* Under ½ ton.

CROP PRODUCTION

Plantation Crop Production, 1964 and 1965

Crop	Production Unit	Estimated Acreages		Estimated Production			
				Quantity		Value	
		1964	1965	1964	1965	1964	1965
				(*Tons*)	(*Tons*)	£	£
Sugar	Estates ..	44,323	44,384	123,551	115,670	5,379,369	4,770,606
	Outgrowers..	2,264	1,703				
Tea ..	Estates ..	24,508*	25,377*	7,495	8,233	2,787,000	3,043,228
	Outgrowers..	2,668	4,008				
Sisal	Estates ..	2,500	2,800	320	200	32,000	13,750
Cocoa	Estates ..	146	146	12	12	2,232	2,196
	Smallholdings	772	1,445†				

* Revised on recent trends, acreage returns not available.
† Includes 51 acres grown on Departmental farms.

PRICES PAID TO FARMER—1965

Cents per lb.

Produce	Centres	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
BEANS*	Kampala ..	30	34	37½	50	40	32½	31	29	30	31½	27	20
	Iganga ..	23	30	30	35	35	26	27	29	29	29	22	20
	Soroti ..	27	40	40	40	40	30	35	35	35	35	32	25
	Fort Portal	20	—	35	—	47	30	26	23	31	30	30	20
DRIED CASSAVA ..	Kampala ..	14	16	20	17	22	20	18	21	22	22	21	20
	Iganga ..	10	12	12	15	15	15	12	13	15	15	17	16
	Soroti ..	12	15	12	15	17	17	16	13	18	16	19	18½
	Fort Portal	10	—	—	—	22	—	—	—	—	—	—	—
SHELLED GROUNDNUTS*	Kampala ..	60	72	67	80	90	100	60	60	66	60	68	65
	Iganga ..	50	70	65	75	70	—	—	54	60	60	65	68
	Soroti ..	60	70	70	80	90	80	—	67	70	70	70	69
	Fort Portal	60	—	65	—	95	110	65	55	65	70	72	75
UNSHELLED GROUNDNUTS* ..	Kampala ..	35	40	45	48	50	50	32	37	40	40	40	36
	Iganga ..	27	40	45	—	35	—	—	36	37	35	35	35
	Soroti ..	35	40	42	50	53	50	—	36	35	32	35	35
	Fort Portal	—	—	—	—	80	—	—	—	—	—	—	—
MAIZE	Kampala ..	15½	17	16½	18½	23	28	19	16½	18	18	17¾	16½
	Iganga ..	14	15	15	18	20	25	15	16	16	16	17	15
	Soroti ..	20	20	22	23	24	30	25	22	22	23	20½	20
	Fort Portal	17	—	12	—	18	45	20	14	17	17	17	17
SORGHUM*	Kampala ..	15	15	15	35	35	35	20	20	22	27	27	25
	Iganga ..	—	15	15	15	35	30	15	16	18	15	20	15
	Soroti ..	—	15	15	15	25	—	15	15	15	15	—	20
	Fort Portal	—	—	—	—	—	20	—	—	—	—	30	20
FINGER MILLET* ..	Kampala ..	26	26½	30½	31½	33	34	28	30	32	32	34	35
	Iganga ..	25	25	25	30	32	26	22	28	29	30	30	35
	Soroti ..	26½	30	30	37	38	37	27	40	30	31	35	37½
	Fort Portal	20	—	20	—	18	20	26	21	32	38	30	35

PRICES PAID TO FARMER—1965

ONIONS	Kampala	25	30	40	40	40	40	25	30	30	35	20	20
	Iganga	35	30	40	—	50	40	—	—	40	30	35	30
	Soroti	50	40	60	50	50	50	60	60	45	40	40	40
	Fort Portal	30	—	35	—	22	25	27	20	20	31	25	25
PEAS	Kampala	30	35	30	34	35	35	36	40	38	43	40	40
	Iganga	25	30	35	—	30	30	—	—	—	—	25	—
	Soroti	27½	35	40	40	40	—	—	40	35	35	30	25
	Fort Portal	30	—	—	—	42	30	—	—	—	—	—	—
SOLANUM POTATOES	Kampala	15	15	22	20	18	15	12	16	16	18	12	10
	Iganga	16	16	20	—	20	20	—	—	—	—	20	15
	Soroti	20	15	22	35	25	18	15	17	20	20	25	25
	Fort Portal	20	—	20	—	—	15	—	15	20	20	20	15
SIMSIM*	Kampala	48	50	52	54	56	58	51	53	58	60	60	63
	Iganga	50	50	50	50	50	50	55	55	52	52	55	55
	Soroti	50	60	—	—	55	60	50	42	60	55	65	—
	Fort Portal	50	—	—	—	45	40	—	45	—	—	—	—
CASTOR SEED	Kampala	31	30	30	30	30½	28	25	30	29	30½	29	28½
	Iganga	20	20	25	25	20	22	20	20	20	20	—	20
	Soroti	—	—	—	17	20	25	—	—	20	—	25	—
	Fort Portal	25	—	25	—	25	20	20	20	25	20	24	30

NOTE.—1. These prices are based on mid-monthly reports of the prices offered by traders for " reasonable quantities " of produce of fair average quality; these may vary considerably from prices in purely local markets which are the major outlets for many farmers.

2. The minimum prices permitted to be paid to farmers by holders of Control Produce Licences during the buying season from 1-1-65 to 31-2-65 for produce marked * were:—

	cents per lb.
Finger Millet—	
(*a*) In Buganda and Eastern Regions	20
(*b*) In other areas of Uganda	18
Mixed Beans—	
(*a*) In Mengo, Bukedi and Busoga Districts	20
(*b*) In other areas of Uganda	18
Groundnuts, unshelled	20
Groundnuts, shelled	32
Sorghum (mtama)	15
Sim-sim	40

PRINCIPAL AGRICULTURAL LEGISLATION

Subject	Act	Statutory Instrument	Title	Object
Coffee	—	16	Coffee Markets and Buyers' Licences	Declaration of coffee buying and selling markets and Limiting the number of Licences that may be issued.
	—	248	Coffee (Export Duty) (Variation of) Schedule) (No. 2) Order	To vary Coffee (Export Duty) Ordinance, 1960.
	—	117	Bugisu Coffee (Appointment of Trustees)	To appoint Trustees for Bugisu Coffee Trust Fund.
	—	123, 139	Coffee (Export Duty) (Variation of Schedule) Order	To Revise the rate of Export Duty.
	—	191	Coffee Markets and Buyers' Licences (Amendment) (No. 2)	To amend S.I. No. 33 of 1964.
	—	248	Coffee (Export Duty) (Variation of Schedule) (No. 2) Order ..	To amend Coffee (Export Duty) Ordinance, 1960.
Cotton	—	161	Cotton (Miscellaneous Prices) Order	Prices to be paid by L.M.B. ex-ginnery for Lint, Ginning and Baling and for Cotton Seed.
	—	164	Cotton Zones (Variation)	To amend Cotton Ordinance, 1952.
	—	232	Specified Percentage (Variation) Order	Varying the Co-operative ginning percentages.
Tobacco—Controlled Produce ..	—	188	Controlled Produce (Minimum Prices) (Air-cured and Fire-cured Leaf Tobacco) Order	Minimum prices to be paid to growers for all grades of Air-cured and Fire-cured leaf.

STAFF LIST

DEPARTMENT OF AGRICULTURE

Disposition of Staff as at 31st December 1965

1. EXTENSION

Title	*Name*
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Hortculturist	Asherer
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	D. N. McNutt
	T. R. Odhiambo
	M. R. Smith

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Chemists	G. A. Wadsworth
Chemists (Supernumerary)	M. A. D'Costa C. Odora
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Film Director	*Vacant*
Photographer	*Vacant*

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Commercial Artist	*Vacant*
Darkroom Technician	*Vacant*

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Agricultural Engineer	W. T. Brown
Principal Assistant Agricultural Officers	H. B. Miller K. B. I. Popiel

Title	*Name*
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Mechanical Cultivation Officer	E. W. Kalanzi

MECHANICAL AGRICULTURAL DEVELOPMENT SCHEMES—*continued*

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Senior Agricultural Assistants	K. Sempaka J. Byekwaso
Field Officers	V. J. Chantler D. H. Edwards S. W. O. Sorenson G. Blenkhorn F. A. Cleal
Technical Store Controller	D. B. Edwards
Tobacco Officer	I. C. M. Paterson

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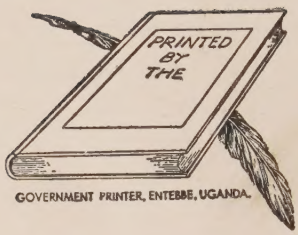

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